DTV-1200

DTV Capable CRT Projector

RUNCO

THE WORLD'S FINEST HOME THEATER PRODUCTS™

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SAFETY INSTRUCTIONS _____

Safety Instructions

Notice On Safety

This equipment is built in accordance with the requirements of the international safety standards EN60950, UL 1950 and CSA C22.2 No.950, which are the safety standards of information technology equipment including electrical business equipment.

These safety standards impose important requirements on the use of safety critical components, materials and isolation, in order to protect the user or operator against risk of electric shock and energy hazard, and having access to live parts.
Safety standards also impose limits to the internal and external temperature rises, radiation levels, mechanical stability and strength, enclosure construction and protection against the risk of fire.

Simulated single fault condition testing ensures the safety of the equipment to the user even when the equipment's normal operation fails.

Installation Instructions

Before operating this equipment please read this manual thoroughly, and retain it for future reference.
Installation and preliminary adjustments should be performed by qualified Runco personnel or by authorized Runco service dealers.

Owner's Record

The part number and serial number are located at the back side of the projector. Record these numbers in the spaces provided below. Refer to them whenever you call upon your Runco dealer regarding this product.

SERIAL NUMBER : _____

DEALER : _____

Safety Indication On The Product

	CAUTION	
⚡	**RISK OF ELECTRIC SHOCK** **DO NOT OPEN**	!

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK)

NO USER-SERVICEABLE PARTS INSIDE

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL
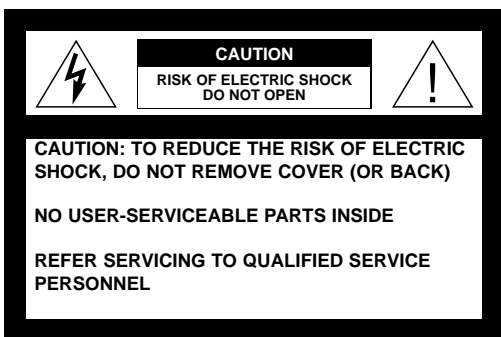
The lightning flash with an arrowhead within a triangle is intended to tell the user that parts inside this product may cause a risk of electrical shock to persons.

The exclamation point within a triangle is intended to tell the user that important operating and/or servicing instructions are included in the technical documentation for this equipment.

Safety Warning
TO PREVENT FIRE OR ELECTRICAL SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

Federal Communication Commission (FCC Statement)
This equipment has been tested and found to comply with the limits of a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note :

The use of shielded cables is required to comply within the limits of Part 15 of FCC rules and EN55022.
• All the safety and operating instructions should be read before using this unit.
• The safety and operating instructions manual should be retained for future reference.
• All warnings on the equipment and in the documentation manuals should be adhered to.
• All instructions for operating and use of this equipment must be followed precisely.

On Safety
1. This product should be operated from an AC power source.
Power input is autoranging from 100 V(-10%) to 240V(+6%).

2. All equipment in the system is equipped with a 3-wire grounding plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

WARNING FOR THE CUSTOMERS: THIS APPARATUS MUST BE GROUNDED (EARTHED) via the supplied 3 conductor AC power cable. (If the supplied power cable is not the correct one, consult your dealer.)

CEE 7

LINE = BROWN
NEUTRAL = BLUE
GROUND = YELLOW/GREEN
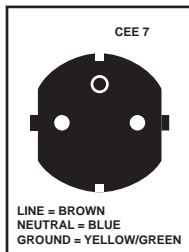
A. Mains lead (Power cord) with CEE 7 plug:
The wires of the mains lead are colored in accordance with the following code.

Green and Yellow:	earth (safety earth)
Blue:	neutral
Brown:	line (live)

ANSI 73.11

LINE = BLACK
NEUTRAL = WHITE
GROUND = YELLOW/GREEN
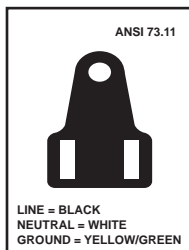
B. Power cord with ANSI 73.11 plug:
The wires of the power cord are colored in accordance with the following code.

Green/Yellow:	ground
White:	neutral
Black:	line (live)

3. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

4. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating.

5. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage-points or short out parts that could result in a risk of fire or electrical shock.

Never spill liquid of any kind on the product. Should any liquid or solid object fall into the cabinet, unplug the set and have it checked by qualified service personnel before resuming operations.

6. Lightning - For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the projector due to lightning and AC power-line surges.

Caution on Fire Hazard

Do not place flammable or combustible materials near projector !

Runco large screen projection products are designed and manufactured to meet the most stringent safety regulations. This projector radiates heat on its external surfaces and from ventilation ducts during normal operation, which is both normal and safe.
Exploding, flammable or combustible materials into close proximity of this projector could result in the spontaneous ignition of that material, resulting in a fire. For this reason, it is absolutely necessary to leave an "exclusion zone" around all external surfaces of the projector whereby no flammable or combustible materials are present. Do not cover the projector with any material while the projector is in operation.

Keep flammable and combustible materials away from the projector at all times. Mount the projector is a well ventilated area away from sources of ignition and out of direct sun light. Never expose the projector to rain or excessive moisture. In the event of fire, use sand, CO_2, or dry powder fire extinguishers; never use water on an electrical fire.
Always have service performed on this projector by authorized Runco service personnel. Always insist on genuine Runco replacement parts. Never use non-Runco replacement parts as they may degrade the safety of this projector.

On Installation

1. Do not place this equipment on an unstable cart, stand, or table. The product may fall, causing serious damage to it.

2. Do not use this equipment near water.

3. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register.

The projector should not be placed in a built-in installation or enclosure unless proper ventilation is provided.

4. Do not block the projector cooling fans or free air movement under and around the projector. Loose papers or other objects may not be nearer to the projector than 4" on any side.

On Servicing

Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock!

Refer all servicing to qualified service personnel.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power cord or plug is damaged or frayed.
b. If liquid has been spilled into the equipment.
c.If the product has been exposed to rain or water.
d. If the product does not operate normally when the operating instructions are followed.
Note: Adjust only those controls that are covered by the operating instructions since improper adjust
ment of the other controls may result in damage and will often require extensive work by a qualified
technician to restore the product to normal operation.
e. If the product has been dropped or the cabinet has been damaged.
f. If the product exhibits a distinct change in performance, indicating a need for service.

Replacement parts - When replacement parts are required, be sure the service technician has used original Runco replacement parts or authorized replacement parts which have the same characteristics as the Runco original part. Unauthorized substitutions may result in degraded performance and reliability, fire, electric shock or other hazards. Unauthorized substitutions may void warranty.

Safety check - Upon completion of any service or repairs to this projector, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

On Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

- To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution. Never use strong solvents, such as thinner or ben-zine, or abrasive cleaners, since these will damage the cabinet.
- To ensure the highest optical performance and resolution, the projection lenses are specially treated with an anti-reflective coating, therefore, avoid touching the lens. To remove dust on the lens, use a soft dry cloth.

On Repacking

Save the original shipping carton and packing material; they will come in handy if you ever have to ship your equipment. For maximum protection, repack your set as it was originally packed at the factory.

On Illumination

In order to obtain the best quality for the projected image, it is essential that the ambient light which is allowed to fall on the screen be kept to an absolute minimum. When installing the projector and screen, care must be taken to avoid exposure to ambient light directly on the screen. Avoid adverse illumination on the screen from direct sunlight or fluorescent lighting fixtures. The use of controlled ambient lighting, such as incandescent spot light or a dimmer, is recommended for proper room illumination. Where possible, care should also be taken to ensure that the floors and walls of the room in which the projector is to be installed are non-reflecting, dark surfaces. Brighter surfaces will tend to reflect and diffuse the ambient light and hence reduce the contrast of the projected image on the screen.

Limited Warranty

Congratulations on your purchase of a Runco video product and welcome to the Runco family! We believe Runco produces "The World's Finest Home Theater Products". With proper installation, setup and care, you should enjoy many years of unparalleled video performance. Please read this consumer protection plan carefully and retain it with your other important documents.

This is a LIMITED WARRANTY as defined by the U.S. Consumer Product Warranty and Federal Trade Commission Improvement Act.

WHAT IS <u>COVERED</u> UNDER THE TERMS OF THIS WARRANTY:
SERVICE LABOR: Runco will pay for service labor by an approved Runco service center when needed as a result of manufacturing defect for a period of two (2) years from the effective date of delivery to the end user.

PARTS (Not including projector lamp): Runco will provide new or rebuilt replacement parts for the parts that fail due to defects in materials or workmanship for a period of two (2) years from the effective date of the warranty. Such replacement parts are then subsequently warranted for the remaining portion (if any) of the original warranty period.

LAMP: Six months or 1000 hours (which ever comes first).

WHAT IS <u>NOT COVERED</u> UNDER THE TERMS OF THIS WARRANTY:
This warranty only covers failure due to defects in materials and workmanship that occur during normal use and does not cover normal maintenance. This warranty does not cover cabinets or any appearance item; any damage to laser discs; failure resulting from accident, misuse, abuse, neglect, mishandling, misapplication, faulty or improper installation or setup adjustments; improper maintenance, alteration, improper use of any input signal; damage due to lightning or power line surges, spikes and brownouts; damage that occurs during shipping or transit; or damage that is attributed to acts of God. In the case of remote control units, damage resulting from leaking, old, damaged or improper batteries is also excluded from coverage under this warranty.

CAUTION: DAMAGE RESULTING DIRECTLY OR INDIRECTLY FROM IMPROPER INSTALLATION OR SETUP IS SPECIFICALLY EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. IT IS IMPERATIVE THAT INSTALLATION AND SETUP WORK BE PERFORMED ONLY BY AN AUTHORIZED RUNCO DEALER TO PROTECT YOUR RIGHTS UNDER THIS WARRANTY. THIS WILL ALSO ENSURE THAT YOU ENJOY THE FINE PERFORMANCE YOUR RUNCO PRODUCT IS CAPABLE OF PROVIDING WHEN INSTALLED AND CALIBRATED BY RUNCO AUTHORIZED PERSONNEL.

RIGHTS, LIMITS AND EXCLUSIONS:
Runco limits its obligations under any implied warranties under state laws to a period not to exceed the warranty period. There are no express warranties. Runco also excludes any obligation on its part for incidental or consequential damages related to the failure of this product to function properly. Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of incidental or consequential damages. So the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

EFFECTIVE WARRANTY DATE:

This warranty begins on the effective date of delivery to the end user. For your convenience, keep the original bill of sale as evidence of the purchase date.

IMPORTANT: WARRANTY REGISTRATION:

Please fill out and mail your warranty registration card. It is imperative that Runco knows how to reach you promptly if we should discover a safety problem or product update for which you must be notified.

TO OBTAIN SERVICE, CONTACT YOUR RUNCO DEALER:

Repairs made under the terms of the Limited Warranty covering your Runco International video product will be performed at the location of the product, during usual working hours, providing location of product is within normal operating distance from a Runco Authorized Service Center. If, solely in Runco's judgement, location of product to be repaired is beyond normal operating distance of the closest Runco Authorized Service Center, it is the owner's responsibility to arrange for shipment of the product for repair. These arrangements must be made through the selling Runco dealer. If this is not possible, contact Runco directly for a return authorization number and shipping instructions. Runco will return product transportation prepaid in the United States, unless no product defect is discovered. In that instance, shipping costs will be the responsibility of the owner.

ADDITIONAL INFORMATION:

To locate the name and address of the nearest Runco Authorized Service location, or for additional information about this warranty, please call, write or visit our website:

<div align="center">

CUSTOMER SERVICE DEPARTMENT
RUNCO INTERNATIONAL
2900 Faber Street
Union City, CA 94587
Ph: (510) 324-7777 / Fax: (510) 324-9300
www.runco.com

</div>

CONNECTIONS

AC Power (Mains) Cord Connection
Use the supplied power cord to connect your Projector to the wall outlet. Plug the female power connector into the male connector at the rear side of the Projector.
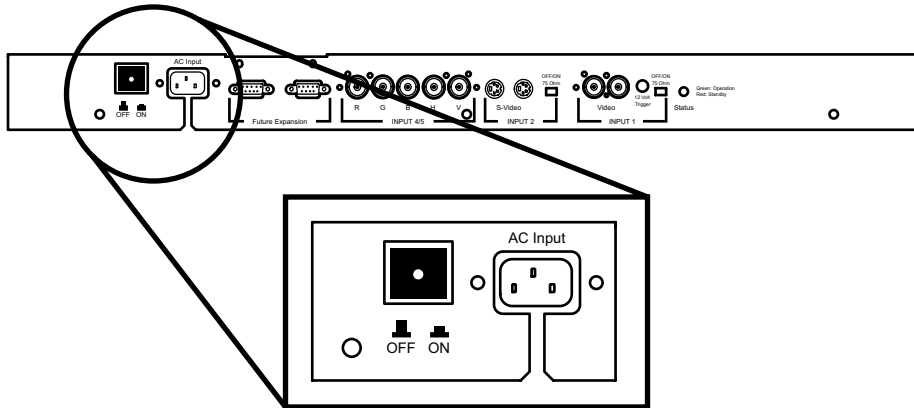
Power Check
The power voltage is autoranging between 100V(-10%) and 240V (+6%).

Switching On/Off
The Projector is switched ON and OFF using the power (mains) switch ON/OFF.

Pushed In: ON
Out: OFF

The Projector can start in the operational mode (ON) or in the stand by mode, depending on the power up setting in the service mode.

Stand by indication lamp :

OFF: Projector switched OFF
Green: Projector is ON
Red: Projector is in Standby Mode.
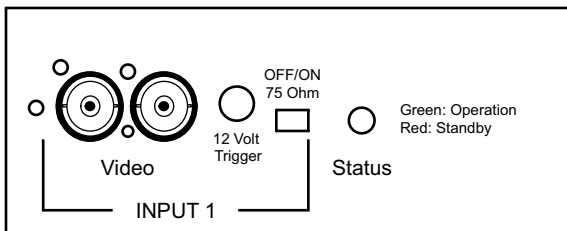
When turning ON the Projector, it can start up in two ways if the "CRT run in" cycle option is switched OFF.
- full white image (projector warm up) or
- immediate image display.

This option can be enabled in the service mode (see page 72).

Source Connections

Input Facilities

The following source types can be connected to the inputs :

- RGB Tri-level Sync
- RGB Composite, Separate or Sync on green
- Component Video
- Component Video with Tri-level Sync
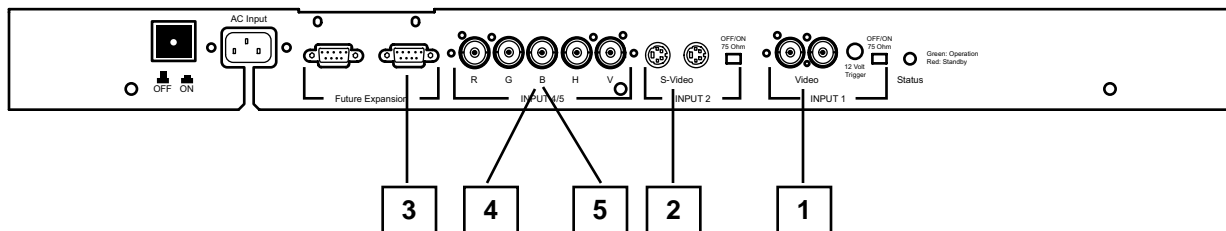
Which source to which input

Source No.	Projector Input	Remote Button No.
1	Comp. Video*	1 (not used)
2	S-Video/Comp. Video*	2 (not used)
3	RGB	3
4/5	RGB	4 or 5
4/5	Component Video	6
4/5	RGB with Tri-level Sync	7
4/5	Component Video with Tri-level Sync	8

* Not used in the DTV-1200

RGB Source to Input 3

Which signal to Input 3
Connect your RGB source with sync on green, composite or separate sync via an interface to Input 3.
Always use an interface when a computer and local monitor have to be connected to the projector as the signal
cable coming from the computer is limited to 60 cm due to interferences.

Pin configuration D9 connector of the Analog input.
1	Not connected
2	Ground RGBS
3	RED
4	GREEN
5	BLUE
6	Ground RGBS
7	Ground RGBS
8	Hor/comp. sync
9	Vert. sync
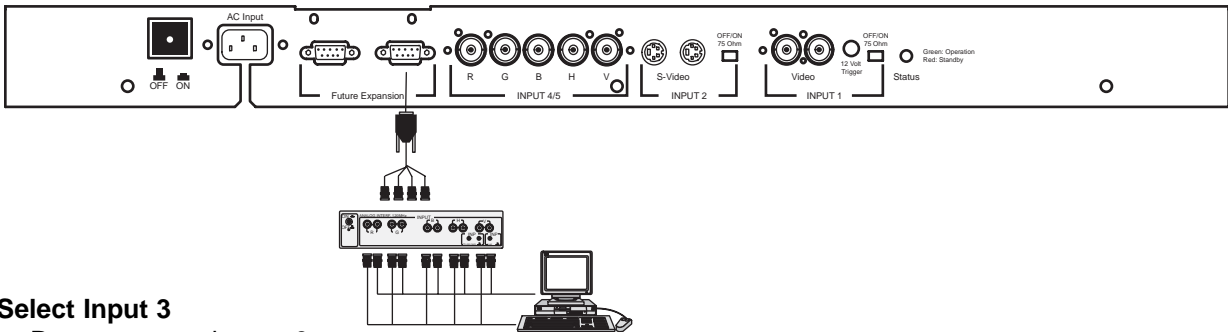
Input Select Input 3
With the Remote, press button 3

RGB Source with Composite Sync to Input 4/5

Which signal to Input 4/5
RGB input terminals with separate H and V Sync inputs, Composite Sync Input or with Sync on green (BNC ter-
minals). The Projector detects automatically where the sync signal is located. This is the Input where Video
Processors (such as the Runco VHD-4404 Ultra) or high definition sources should be connected.
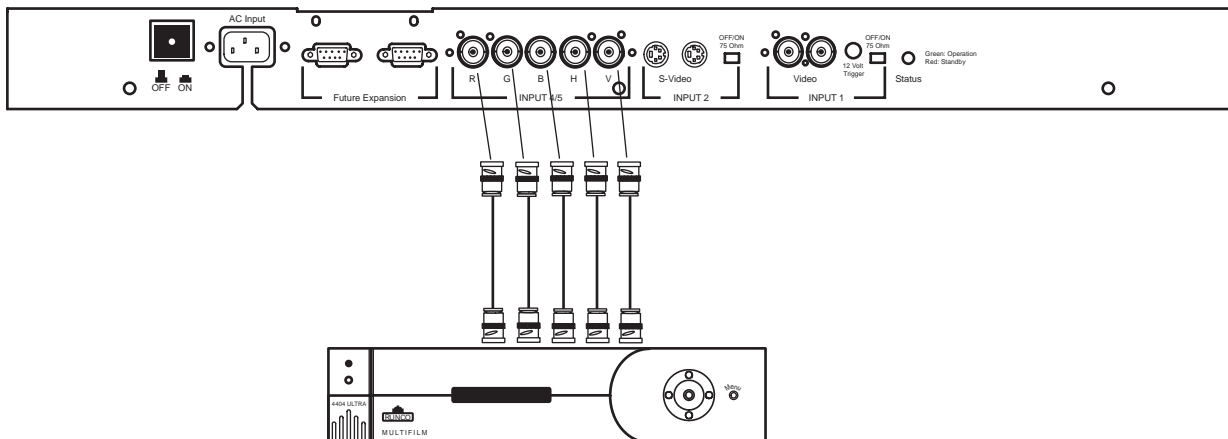
RGB Sync on green or separate Sync Input selection
With the remote, press:
- Button 4 for Sync on green
- Button 5 for Separate Sync

RGB Source with Tri-level Sync to Input 4/5

Which signal to Input 4/5

RGB input terminals with Tri level sync input or with Tri-level sync on green (BNC terminals). The projector detects automatically where the sync signal is located.

RGB3S or RG3sB input selection

With the remote, press digit button 7

Component Source to Input 4/5

Which signal to Input 4/5

(R-Y)Y(B-Y) input terminals with sync input or with sync on the luminance (Y) input (BNC terminals). The projector detects automatically where the sync signal is located.

Component Video input selection

With the remote, press digit button 6

RS-232 Connection

RS-232 input and RS-232 output of the Projector.

The projector is equipped with a RS-232 port that allows communication with an automation system such as AMX, Crestron, etc.

Applications
a) remote control:
  - allow storage of multiple projector configurations and set ups.
  - wide range of control possibilities.
  - address range from 0 to 255.

b) data communications:
  - sending data to the projector or copying the data from the projector to a hard memory device.

Set up of the Baud Rate for Communication with a Computer.
See 'Changing the Baud Rate' in chapter 'Service Mode'.

GETTING STARTED

Remote Control & Local Keypad

Battery Installation in the Remote

Two batteries are packed together with the Remote. Before using your Remote, install first these batteries.

1 Remove the battery cover on the backside by pushing the handle a little towards the bottom of the Remote.
2 Lift up the top side of the cover at the same time.
3 Insert the batteries as indicated in the Remote.
4 Put the battery cover on its place.

How to replace the batteries in the Remote?

To replace the batteries :

1 Remove the battery cover on the backside by pushing the handle a little towards the bottom of the Remote.
2 Lift up the top side of the cover at the same time.
3 Push on the + side of the battery towards the - side
4 Lift up the battery at the same time.
5 Repeat for the second battery.
6 Insert the batteries as indicated in the Remote (battery type AA or LR6 or equivalent).
7 Put the battery cover on its place.

Note: only important if more than one projector is installed in the room :
1. The default address is zero (0) or (1). The standard Remote is setup for common address zero.
   To change the common address of the Remote, contact a Runco service center. If it is necessary to program the projector address into the Remote, see 'Projector Address'.
2. Projector address has to be reprogrammed everytime the battery is changed, the Remote will always switch to the default address.
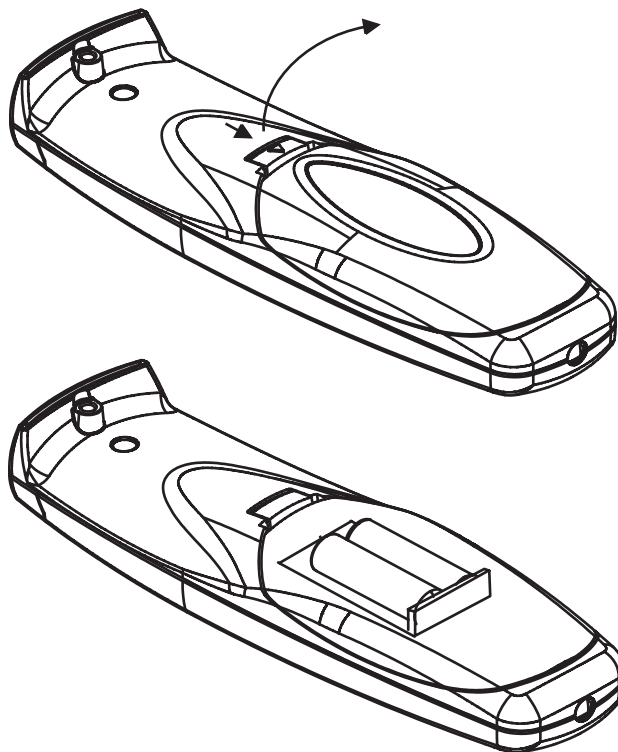
Overview of Functions

This remote control includes a battery powered infrared (IR) transmitter that allows the user to control the projector remotely.

This remote control is used for source selection, control, adaptation and set-up.

It includes automatic storing of:

      - picture controls (Brightness, Sharpness,....)

      - settings

Other functions on the control units are:

      - switching between standby and operational modes

      - switching to "pause" (picture mute)

      - direct access to all connected sources

standby	⏻
pause/park	▽
sharpness	⬚
tint	⚠
color	◑
brightness	☼
contrast	◐
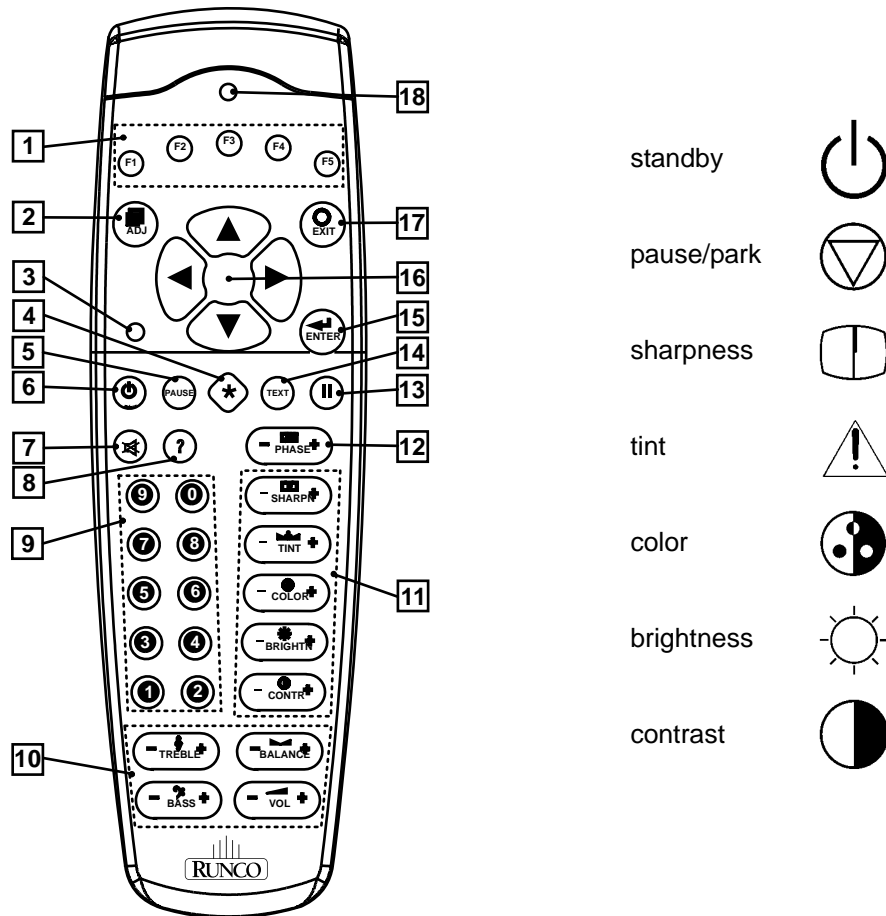
1   **Function keys:** user programmable keys with functions for direct access.

2   **ADJ:** ADJUST key, to enter or exit the adjustment mode.

3   **Address key (recessed key):** to enter the address of the projector (between 0 and 9).

     Press the recessed address key with a pencil, followed by pressing one digit button between 0 and 9.

4   not used

5   **PAUSE:** mutes the projected image.

6   **STBY:** stand-by button, toggles power On/Off (Stby).

7   not used

8   not used

9   **Digit buttons:** direct input selection.

10 **Audio controls:** not used

11 **Picture controls:** use these buttons to obtain the desired picture.

12 **PHASE:** not used.

15

13 FREEZ: press to freeze the projected image.

14 TEXT: when adjusting one of the image controls, e.g. contrast, during a meeting, the displayed bar scale can be removed by pressing 'TEXT' key first. To re-display the bar scale on the screen, press 'TEXT' key again.

15 ENTER: to start up the adjustment mode or to confirm an adjustment or selection in the adjustment mode.

16 Cursor Keys: to make menu selections when in the adjustment mode.or to increase or decrease the analog level of the image controls when they are first selected.

17 EXIT: to leave the adjustment mode or to scroll upwards when in the adjustment mode.

18 IR Output LED: lights up when a button on the remote control is pressed. (This is a visual indicator to check the operation of the remote control)

Start Up

Press the Power button on the remote; ensure the main Power button on the rear of the Projector is pressed in.

When this warm up cycle message appears on the screen, the menu offers the possiblity to start with a warm up period (press ENTER) or to skip this cycle (press EXIT). The number of minutes and the horizontal frequecy can be programmed in the 'Service mode' under the item 'Projector Set Up'.

Note: This warm up period is built in so that the Projector can quickly reach its operating temperature.

When starting this warm up period, a full white image is shifted on the CRT faceplate to avoid a burn in. Every 30 seconds a text box will be displayed on another place on the screen with the remaining time to go.

The image dimensions can be adjusted with the cursor keys to avoid scanning on the edges of the CRT's.

```
          PROJECTOR WARM UP
    A FULL WHITE PATTERN WILL BE
         GENERATED FOR x MIN.
      FOR IMMEDIATE USE OF THE
       PROJCTOR, PRESS <EXIT>
       WARNING : SKIPPING THIS
    PROCEDURE CAN REDUCE THE
   INITIAL PICTURE QUALITY OF THE
           PROJECTED IMAGE;
       YOU CAN ADJUST THE IMAGE
    DIMENSTIONS WITH THE ARROW
  KEYS TO AVOID SCANNING ON THE
           EDGES OF THE CRT'S;
  THIS OPTION CAN BE DISABLED IN
          THE SERVICE MENU

              with <ENTER>
            <EXIT> to return
```

To interrupt the warm up period:
1   Press EXIT, the warm up menu will be redisplayed with the remaining time indication.
2   Press EXIT again to quit the warm up cycle and to display the source.

Start Up in a Specific Source

When the Projector is in Standby, it can be turned ON with a specific source. To do this, simply press the source number button (see page 19).

Stationary Image Warning

⚠ **Do not display a stationary image with full brightness and contrast for longer than 10 minutes, otherwise you risk damage to the CRT's.**

Remote Commands to the Projector

Pointing the Remote to the reflective screen
Point the front of the Remote to the screen surface.
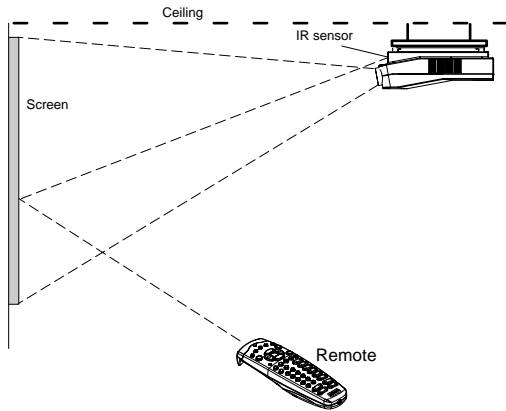
Point the front of the Remote towards one of the IR sensors in the projector.

Front of projector   Rear side of projector
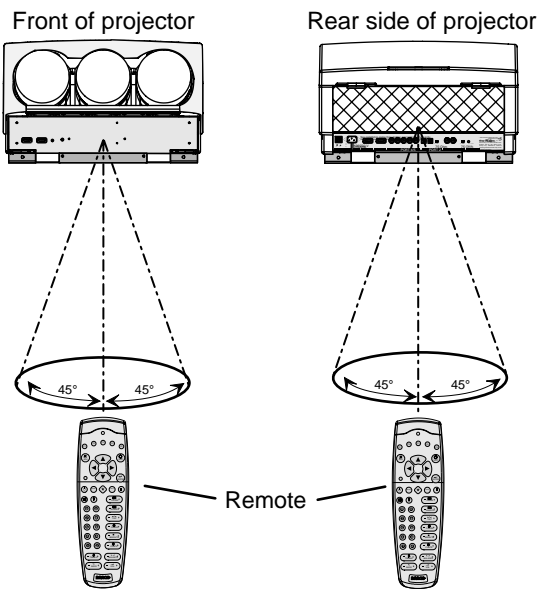
Remote

When using the wireless remote control, make sure you are within the effective operating distance (30m, 100ft in a straight line). The remote control unit will not function properly if strong light strikes the sensor window or if there are obstacles between the remote control unit and the projector's IR sensor.

Remote used in a hardwired configuration.
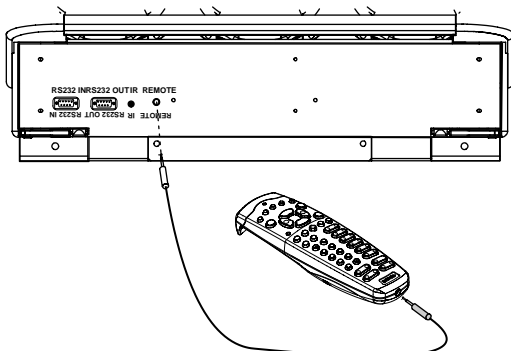
Plug one end of the remote cable in the connector on the bottom of the Remote and the second side in the connector in the rear panel of the projector labelled 'REMOTE'.

Projector Address

Why a projector address?
Since more than one projector can be installed in a room, the separate projectors can be separately address-able with a Remote or a computer.

Set up an Individual Projector Address
The set up of a projector address can be done via the software.
See 'Change Projector Address' in Chapter 'Service Mode'

How to control the projector or projectors?
The projector's address may be set to any value between 0 and 255 which can be set in the Service Mode.
When the address is set, the projector can be controlled now with:
- the Remote for addresses between 0 and 9.
- a Control System for addresses between 0 and 255.

Note: A projector will respond to a Remote set to the common address ('0' or '1') regardless of what address is set in the projector itself.

Common Address
Every projector has a common address '0' or '1'. The choice between '0' and '1' can be selected in the Service mode.

Before using the Remote
The Remote is default programmed with address 0 or 1, 'common address'. With that 'common address' pro-grammed into the Remote, every projector, with the same common address set up, will listen to the commands given by this Remote. If it is necessary to control a specific projector, than enter the projector address into the Remote (only when that address is between 0 and 9). The projector with the corresponding address will listen to that specific Remote.

Display the Projector Address on the Screen.
Press the ADDRESS key (recessed key on the Remote) with a pencil. The projector's address will be displayed in a 'Text box' (menu 1). This text box disappears after a few seconds.
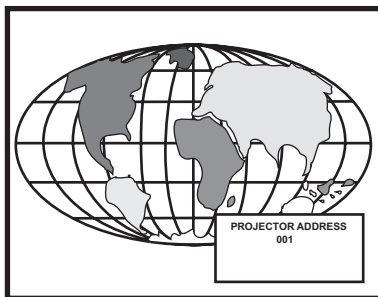
To continue using the Remote with that specific address, it is necessary to enter the same address with the digit buttons (address between 0 and 9) within 5 seconds after pushing the address key. For example: if the Address key displays projector address 003, then press "3" digit button on the Remote to set the Remote's address to match the projector's address. Do not press 003 digits. This will address the remote control to '0' and control all projectors in the room.
If the address is not entered within 5 seconds, the Remote returns to its default address (zero address) and control all projectors in the room.

How to program an address into the Remote?
Press the ADDRESS key (recessed key on the Remote) with a pencil and enter the address with the digit but-tons within 5 seconds after pushing the address key. That address can be any digit between 0 and 9.

Input selection modes

Source No.	Projector Input	Remote Button No.
3	RGB	3
4/5	RGB (HV, S.O.G)	4 or 5
4/5	Component Video	6
4/5	RGB with Tri level sync	7
4/5	Component Video with Tri-level sync	8

Input Selection via the Remote.

With the digit buttons, it is possible to select one of the above input modes.

When the source is selected

When a valid and available source is selected, there will be information displayed on the screen about that source. This information includes:
- Source number
- Horizontal frequency
- Vertical frequency

```
Source 02
Fh= 63 kHz
Fv= 60 Hz
```

When the entry is a non valid source number, a warning appears on the screen: 'input not available'.

```
WARNING
Input not
available
```

When a valid source number is selected, the projector will display this source or it will wait on the selected source number until the source becomes available. A message 'source not available' will be displayed for a short time.

```
WARNING
Source not
available
```

When a Video or S-Video source is selected and no decoder is installed, the projector displays the folllowing message: 'Option not installed'.

```
WARNING
Option not
 installed!
```

Picture Controls

The control keys are located on the right side of the key panel of the Remote and indicated with the name of the control and an icon.

When an image control is pressed, a text box with bar scale and the function name of the control, e.g. 'brightness...' appears on the screen (only if text is ON). The length of the bar scale indicates the current memorized setting for this source. The bar scale changes as the + or - side of the button of the control are pressed.

Brightness Control:
A correct 'brightness' setting is important for good image reproduction. Adjust the brightness with the + button and - button until the darkest parts of the picture appear black.

A bar scale gives a visual indication on the screen of the current brightness setting while pressing on the above indicated buttons. If the bar scale is not visible on the screen, press 'TEXT' once and retry the above indicated buttons.

The bar scale increases when pressing on the + button (higher brightness) and decreases when pressing on the - button (lower brightness).

Contrast Control:
A correct 'contrast' setting is important for good image reproduction.
Adjust the contrast to the level you prefer, according to room lighting conditions.
A bar scale gives a visual indication on the screen of the current contrast setting while pressing the + or - buttons . If the bar scale is not visible on the screen, press 'TEXT' key once and retry the above indicated buttons.
The bar scale increases when pressing on the + button (higher contrast) and decreases when pressing on the - button (lower contrast).

Color Saturation Control: Not used on the DTV-1200

Tint Control: Not used on the DTV-1200

Sharpness Control: Not used on the DTV-1200

Sound Controls: Not used on the DTV-1200

The Pause Key

The 'Pause' button mutes the projected image. When Pause is pressed, the image will disappear until it is pressed again.

The Freeze Key

When the Freeze key is pressed, the image is frozen until this key is pressed again.

START UP OF THE ADJUSTMENT MODE _____

Adjustment Mode

Start Up

All picture adjustments are made while in the 'Adjustment mode'.

Press the **ADJUST** key.
The projector displays the 'Main menu' (menu 1).

```
        MAIN MENU


        Image Control
        Eye-Q
        Function Keys


    ➤ Service Menus


        Select with ↑ or ↓
        then <ENTER>
        <EXIT> to return
```
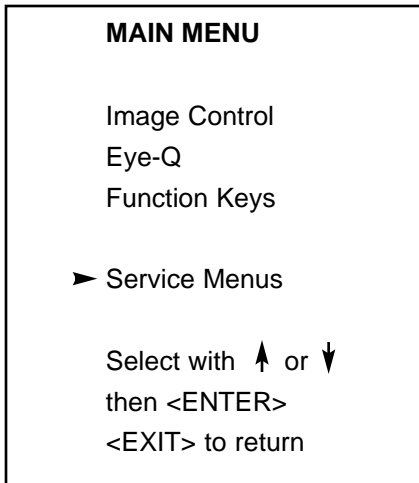
menu 1

You are now in the 'Adjustment mode'. The cursor keys are used to make menu selections and also vertical and horizontal adjustments. The ENTER and EXIT keys are used to move forward and backward through the menu structure. The ADJUST key can be used to terminate the adjustment mode while a path selection menu (head menu) is displayed.

Possible Paths

Depending on the projector configuration the following paths are possible with the 'Main menu'.

Image Control - Allows you to change the color temperature of the image and to select another format (adjustment) for the image.

Eye-Q Control - This control allows to align the projector automatically using the autoconvergence unit EYE-Q built into the projector.

Function Keys - Gives an overview of the programmed function for each key.

Service Menus - Installation and adjustment menus to set up the projector. Before entering a warning will be displayed.

MAIN MENU

Main Menu

Overview Flowchart

```
MAIN MENU ─┬─ IMAGE CONTROL ─┬─ COLOR ADJUST
           │                 └─ FORMAT SELECT
           │
           ├─ EYE-Q CONTROL ─┬─ EYE-Q TOUCH UP
           │                 ├─ EYE-Q AUTO CONVERGE
           │                 └─ EYE-Q FULL ALIGNMENT
           │
           ├─ FUNCTION KEYS ─┬─ F1
           │                 ├─ F2
           │                 ├─ F3
           │                 ├─ F4
           │                 └─ F5
           │
           └─ SERVICE MENUS ─┬─ EYE-Q
                             ├─ GUIDED
                             ├─ RANDOM ACCESS
                             ├─ INSTALLATION
                             └─ SERVICE
```
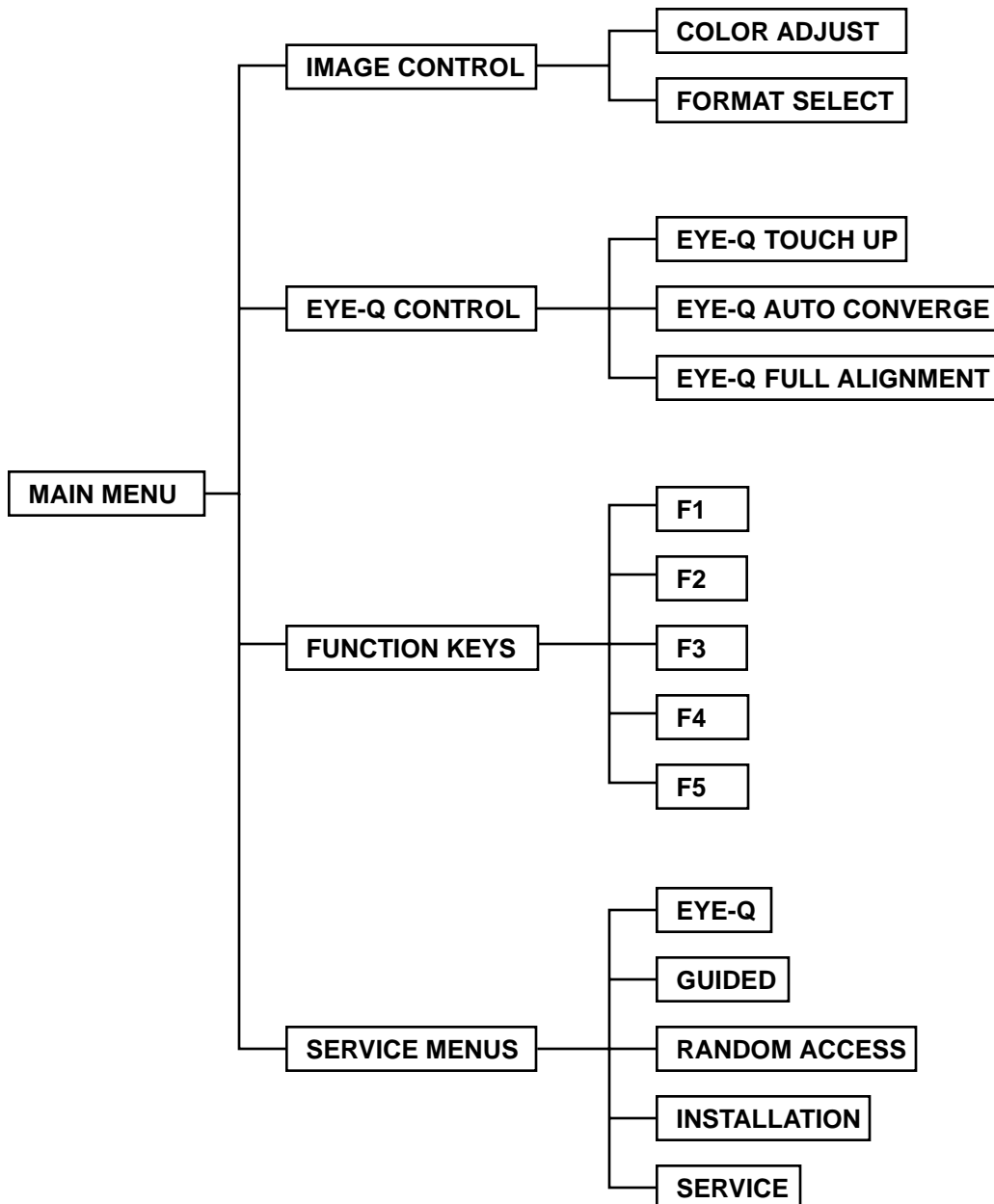
Image Control

Starting Up

1 Push the cursor keys é or ê to select 'Image Control' (menu 1).
The selected item will change in color and a marker will be displayed in front of it.
2 Press ENTER to select.
The 'Image Control' menu will be displayed (menu 2a).

```
        MAIN MENU

  ➤ Image Control
    Eye-Q
    Function Keys

    Service Menus

    Select with ↑ or ↓
    then <ENTER>
    <EXIT> to return
```

```
      IMAGE CONTROL

    Image Processing
    Color Adjust
    Format Select

    Select with ↑ or ↓
    then <ENTER>
    <EXIT> to return
```
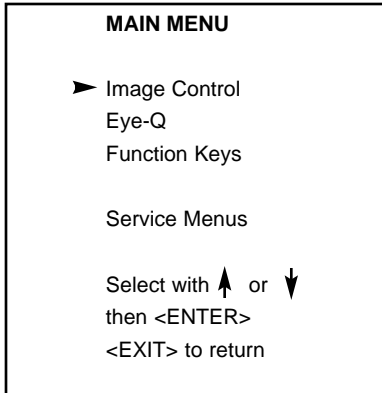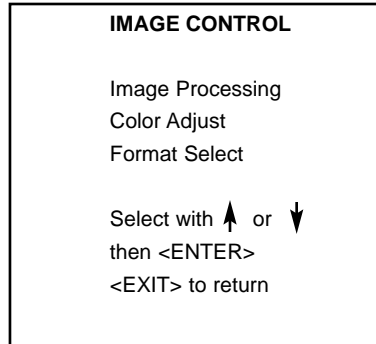
menu 1   menu 2a

Color Adjust

What can be done?
The color temperature of the image can be installed. The customer has the choise between 4 factory preset
color temperatures and one custom. This custom color temperature has to be adjusted in the 'Random Access
Adjustment Mode'.

How to select 'Color Adjust' and to select a new color temperature?
1   Push the cursor keys ↑ or ↓ to select 'Color Adjust' (menu 1).
2   Press **ENTER** to display the Color Adjust menu (menu 2).
3   Push the cursor keys ↑ or ↓ to select the desired color temperature.
4   Press **ENTER** to activate that color temperature.

```
      IMAGE CONTROL

  ➤ Image Processing
    Color Adjust
    Format Select

    Select with ↑ or ↓
    then <ENTER>
    <EXIT> to return
```

```
        COLOR ADJUST

    Broadcast        3200 °K
    Film             4900 °K
  ➤ Video            6500 °K
    Computer         9300 °K
    Custom

    Select with ↑ or ↓
    then <ENTER>
    <EXIT> to return
```
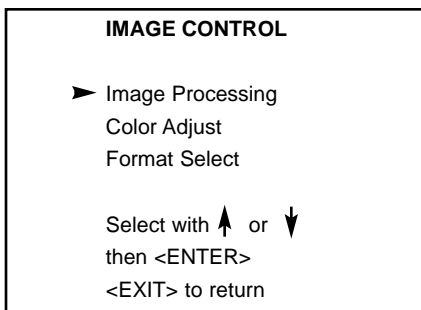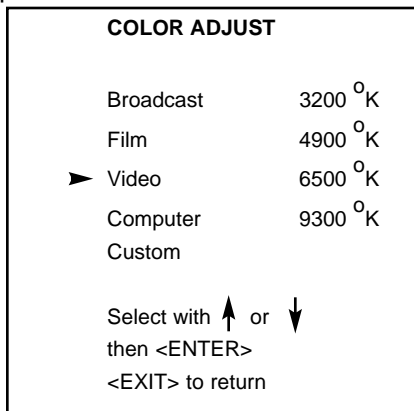
menu 1   menu 2

Format Select

What can be done?

For one source, up to 8 different sets of settings can be stored. A set of settings is called 'Format'.
A 'Format' can be 'available' or 'free'.
'Available' when settings are stored in this location.
'Free' when no setting are stored in this location. This location can be used for storing new adjustment settings for this source.
When 'available', a name of 8 characters can be programmed by the user.

How to select a 'Format' ?

1   Push the cursor keys ↑ or ↓ to select 'Format Select' (menu 1).
2   Press **ENTER** to display the Format List (menu 2).
3   Push the cursor keys ↑ or ↓ to select the desired 'Format'.
4   Press **ENTER** to select.

```
                          FORMAT LIST
                          Source 01          VIDEO
                Format 1   Available          xxxxxxxxxx
                Format 2   Free               xxxxxxxxxx
              ► Format 3   Available          xxxxxxxxxx
                Format 4   Free               xxxxxxxxxx
                Format 5   Free               xxxxxxxxxx
                Format 6   Free               xxxxxxxxxx
                Format 7   Free               xxxxxxxxxx
                Format 8   Free               xxxxxxxxxx
```

```
         IMAGE CONTROL


         Image Processing
         Color Adjust
      ►  Format Select

         Select with ↑ or ↓
         then <ENTER>
         <EXIT> to return
```

menu 1

```
               Select with ↑ or ↓
               then <ENTER> to select
               <EXIT> to return
               <TEXT> to enter a name
```

menu 2

How to add a name to a 'Format'?

1   Push the cursor keys ↑ or ↓ to select the Format to which a name has to be added (menu 1).
2   Press **TEXT** to display the compose menu (menu 2).
3   The position of the character which will be edited, will be indicated with a digit. Push the cursor keys
           ↑ , ↓ , ← or → to select the first character.
4   Press **ENTER** to select the choosen character. This character will be inserted on the indicated position.
        The 'edit character' indication will be incremented with one.
5   Continue in the same way for the other characters.
6   When the name is completed, press **EXIT** to return to the 'Format List' menu (menu 3).

```
           FORMAT LIST                           COMPOSE
           Source 01        VIDEO
   Format 1  Available      xxxxxxxxxx      A  B  C  D  E  F  G  H  I
   Format 2  Free           xxxxxxxxxx      J  K  L  M  N  O  P  Q  R
 ► Format 3  Available      xxxxxxxxxx      S  T  U  V  W  X  Y  Z
   Format 4  Free           xxxxxxxxxx      /  :  -
   Format 5  Free           xxxxxxxxxx      0  1  2  3  4  5  6  7  8  9
   Format 6  Free           xxxxxxxxxx
   Format 7  Free           xxxxxxxxxx               XXXXXXXXXX
   Format 8  Free           xxxxxxxxxx
                                            Edit character 1
        Select with ↑ or ↓
        then <ENTER> to select                     Select with ↑ or ↓
        <EXIT> to return                           then <ENTER>
        <TEXT> to enter a name                     <EXIT> to return
```

menu 1   menu 2

```
           FORMAT LIST
           Source 01        VIDEO
   Format 1  Available      xxxxxxxxxx
   Format 2  Free           xxxxxxxxxx
 ► Format 3  Available      xxxxxxxxxx
   Format 4  Free           xxxxxxxxxx
   Format 5  Free           xxxxxxxxxx
   Format 6  Free           xxxxxxxxxx
   Format 7  Free           xxxxxxxxxx
   Format 8  Free           xxxxxxxxxx

        Select with ↑ or ↓
        then <ENTER> to select
        <EXIT> to return
        <TEXT> to enter a name
```

menu 3

How to store the settings to a new 'Format'?

1   Push the cursor keys ↑ or ↓ to select a free format.
2   Press ENTER to activate.
3   Make any adjustment to the image.
4   Quit the adjustment mode by pressing ADJUST.
          The selected format will change from free to available.

Eye-Q Control

With the Eye-Q functions it is possible to automatically adjust the convergence of the image.

Start Up

1   Push the cursor keys ↑ or ↓ to select 'EYE-Q control' (menu 1).
          The selected item will change in color and a marker will be displayed in front of it.
2   Press ENTER to select.
          The 'EYE-Q control' menu will be displayed (menu 2).

```
      MAIN MENU                          EYE-Q CONTROL

  ➤ Image Control                      EYE-Q Touch Up
    Eye-Q                              EYE-Q Auto Converge
    Function Keys

    Service Menus


    Select with ↑  or  ↓               Select with ↑  or  ↓
    then <ENTER>                       then <ENTER>
    <EXIT> to return                   <EXIT> to return
```
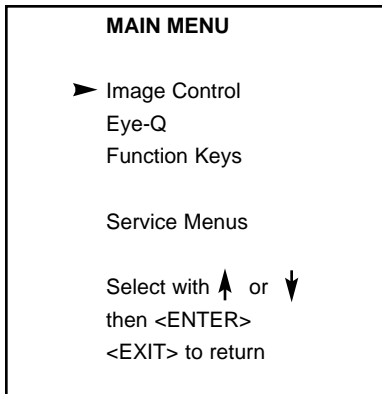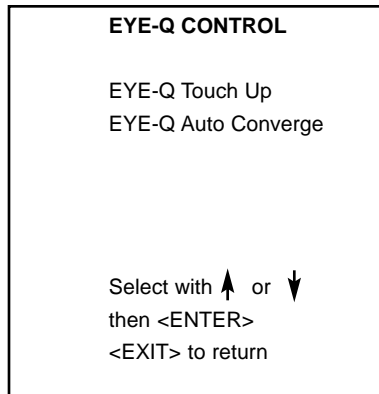
menu 1   menu 2

Note: Before starting one of the EYE-Q functions, be sure the projector has warmed up for at least 20 min.

Eye-Q Touch Up

What can be done?

If you discover in the middle of the image a convergence misalignment between red, green and blue, the static convergence of this currently selected source can be adjusted with the touch up function.

How to start up the EYE-Q Touch Up?

1   Push the cursor keys ↑ or ↓ to select 'EYE-Q Touch Up' (menu 1).
2   Press **ENTER** to activate the touch up function.
        The process starts and when successfully completed, the projector will return to image display of the current source.

```
        EYE-Q CONTROL

  ➤   EYE-Q Touch Up
       EYE-Q Auto Converge




       Select with ↑  or  ↓
       then <ENTER>
       <EXIT> to return
```
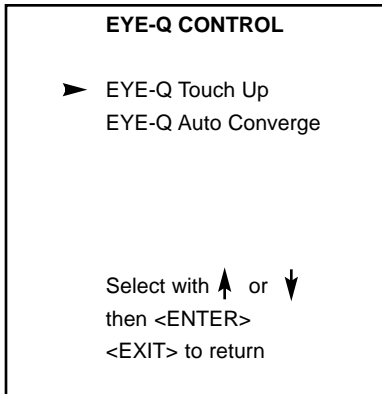
menu 1

Eye-Q Auto Converge

What can be done?

The autoconvergence on the current source will be carried out automatically, starting from the existing settings.
By projecting alternately red and blue lines, 25 convergence areas are aligned onto the green pattern.

How to start up the EYE-Q Auto Converge?

1   Push the cursor keys ↑ or ↓ to select 'EYE-Q Auto Converge' (menu 1).
2   Press **ENTER** to activate the autoconvergence function.
        The process starts and when successfully completed, the projector will return to image display of the current source.

```
        EYE-Q CONTROL

       EYE-Q Touch Up
  ➤   EYE-Q Auto Converge




       Select with ↑  or  ↓
       then <ENTER>
       <EXIT> to return
```
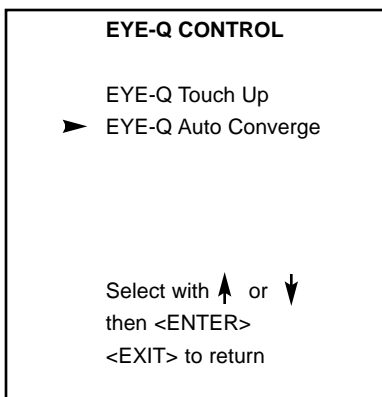
menu 1

Function Keys

What can be done?

Quick access keys to customer pre-programmed adjustments. Almost any adjustment can be added to a function key. To program a function key, it is necessary to enter into the 'Service Menu'. To activate a function key, just press the corresponding key.
The following functions are factory pre-programmed :

        F1 = EYE-Q Touch up
        F2 = Convergence Red on Green
        F3 = Convergence Blue on Green
        F4 = H & V Size
        F5 = Color Balance

How to get an overview of the programmed keys?

1   Push the cursor keys ↑ or ↓ to select 'Function Keys' (menu 1).
2   Press ENTER to display an overview of the function keys (menu 2).
3   Press EXIT to return.

```
          MAIN MENU


      Image Control
      Eye-Q
  ➤   Function Keys


      Service Menus


      Select with ↑  or  ↓
      then <ENTER>
      <EXIT> to return
```
menu 1
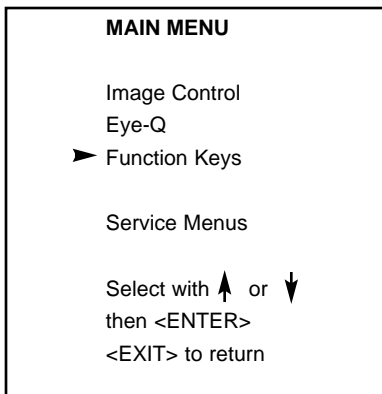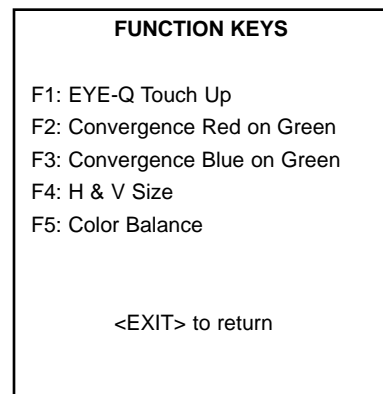
```
          FUNCTION KEYS


      F1: EYE-Q Touch Up
      F2: Convergence Red on Green
      F3: Convergence Blue on Green
      F4: H & V Size
      F5: Color Balance



            <EXIT> to return
```
menu 2

Service Menus

What can be done?

With the complete set of Service menus such as EYE-Q, Guide, Random Access, Installation and Service it is possible to adjust the projector completely.
When entering the Service Menus, a warning will be displayed mentioning that only qualified Runco service personnel may enter the Service menus.

How to enter the Service Menu?

1   Push the cursor keys ↑ or ↓ to select 'Service Menus' (menu 1).
2   Press ENTER to select. A warning will be displayed (menu 2). "Risk of incorrect adjustment of the projector. The following SERVICE menus are reserved to and to be performed only by qualified personnel! If qualified, press <ENTER> to continue, or if not, <EXIT> to return.

```
          MAIN MENU


      Image Control
      Eye-Q
      Function Keys


  ➤   Service Menus


      Select with ↑  or  ↓
       then <ENTER>
      <EXIT> to return
```
menu 1

```
             WARNING

    RISK OF INCORRECT ADJUSTMENT
    OF THE PROJECTOR.

    The following SERVICE menus are reserved to,
    and to be performed only by qualified personnel !

    If qualified, press
    <ENTER> to continue, or
    if not, <EXIT> to return.
```
menu 2
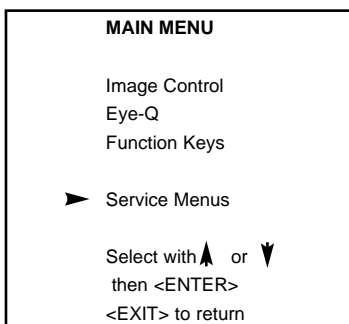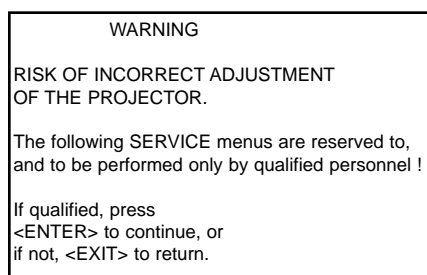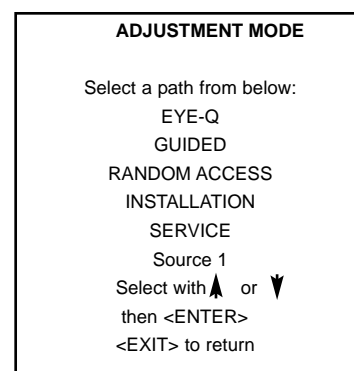
```
          ADJUSTMENT MODE


        Select a path from below:
              EYE-Q
              GUIDED
          RANDOM ACCESS
           INSTALLATION
             SERVICE
             Source 1
        Select with ↑  or  ↓
          then <ENTER>
          <EXIT> to return
```
menu 3

ENTERING THE SERVICE MENUS

Service Menus

What is available in the Service menus?

A complete set of adjustments divided in different modes are available to adjust the projector
The different mode are:
EYE-Q: to autoconverge the projector.

Guided : Guided should be selected if the user intends to perform a complete alignment of the projected image and is not extensively familiar with the projector. All the necessary geometry and convergence adjustments are executed in a predetermined sequence.

Random Access: Random Access should be selected if the user intends to make only a few adjustments or if the user is highly qualified and knows the sequence of adjustments.

Installation: Installation should be selected if the projector has been relocated and/or a different screen size is desired.

Service: Service should be selected if the user intends to change predefined settings.

How to enter the Service Menus?

1   Press the ADJUST key.
    The projector displays the 'Main menu' (menu 1).

2   Push the cursor keys ↑ or ↓ to select 'Service Menus'

3   Press ENTER to select.
    A warning will be displayed (menu 2).

4   If qualified, press ENTER to continue
    The Service menus main menu will be displayed (menu 3).

```
        MAIN MENU

     Image Control
     Eye-Q
     Function Keys

  ➤  Service Menus

     Select with ↑  or  ↓
      then <ENTER>
     <EXIT> to return
```
menu 1

```
          WARNING

 RISK OF INCORRECT ADJUSTMENT
 OF THE PROJECTOR.

 The following SERVICE menus are reserved to,
 and to be performed only by qualified personnel !

 If qualified, press
 <ENTER> to continue, or
 if not, <EXIT> to return.
```
menu 2

```
       ADJUSTMENT MODE

    Select a path from below:
           EYE-Q
           GUIDED
       RANDOM ACCESS
         INSTALLATION
           SERVICE
           Source 1
    Select with ↑  or  ↓
       then <ENTER>
      <EXIT> to return
```
menu 3

Password Protection

Some items in the Adjustment mode are password protected. While selecting such an item, the projector asks to enter your password. (Password protection is only available when the password strap on the contoller module is ON. Contact an authorized Runco technician when no password is requested during the adjustment procedure and password protection is desired.)

```
   enter
  password
   x x x x
```
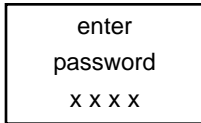
Entering the Password

Your password contains 4 digits.

Enter the digits with the numeric keys on the Remote.

Example : 1 1 1 1

For each digit entered, a 'X' appears on the screen under the displayed text 'enter password'.

When the password is correct, you gain access to the selected item.
When the entered password is wrong, the error message 'wrong password !!!' will be displayed.

Note:

When the password is correctly entered, all other password protected items are accessible without re-entering the password.
When re-entering the adjustment mode, it will be necessary to enter your password again when selecting a password protected item.

RANDOM ACCESS ADJUSTMENT MODE

Random Access Adjustment Mode

Starting Up

Push the cursor keys up or down to highlight "RANDOM ACCESS" and then press ENTER.

Some items in the Random access mode are password protected (when the password function is enabled). Enter your password to continue. All other password protected items are now also available if you stay in the adjustment mode.

```
        ADJUSTMENT MODE

   Select a path from below:
            EYE-Q
           GUIDED
       RANDOM ACCESS
        INSTALLATION
           SERVICE
          Source 1
   Select with ▲  or  ▼
       then <ENTER>
     <EXIT> to return
```

Overview Flowchart
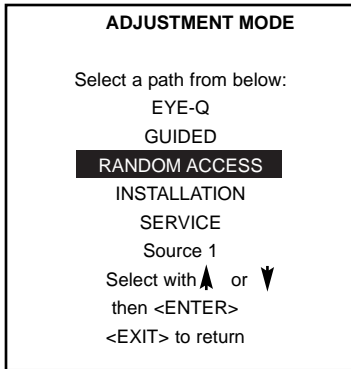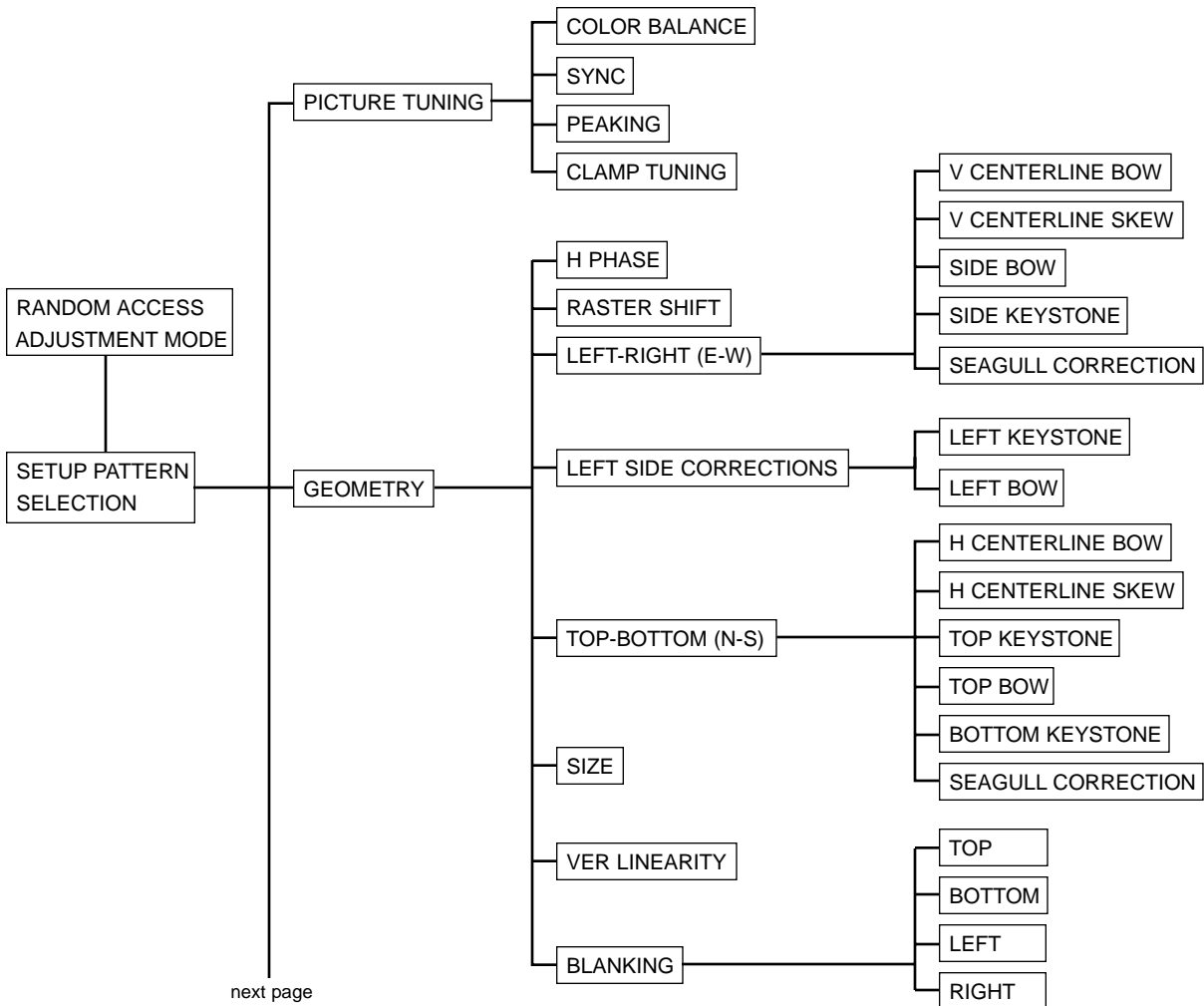
```
                                                    ┌─────────────────────┐
                                                    │ RED                 │
                                                    ├─────────────────────┤
                                                    │ GREEN               │
                                                    ├─────────────────────┤
                                                    │ BLUE                │
                              ┌───────────────┐     ├─────────────────────┤
                              │ COLOR SELECT  │─────│ RED AND GREEN       │
                              └───────────────┘     ├─────────────────────┤
                                                    │ BLUE AND GREEN      │
                                                    ├─────────────────────┤
                                                    │ RED AND BLUE        │
┌──────────────────┐                                └─────────────────────┘
│ RANDOM ACCESS    │
│ ADJUSTMENT MODE  │                                ┌─────────────────────┐
└──────────────────┘                                │ GREEN ONLY          │
                                                    ├─────────────────────┤
                              ┌───────────────┐     │ RED ON GREEN        │
                              │ CONVERGENCE   │─────├─────────────────────┤
┌──────────────────┐         └───────────────┘     │ BLUE ON GREEN       │
│ SETUP PATTERN    │                                └─────────────────────┘
│ SELECTION        │
└──────────────────┘                                ┌─────────────────────┐
                                                    │ RED                 │
                              ┌───────────────┐     ├─────────────────────┤
                              │ FOCUSING      │─────│ GREEN               │
                              └───────────────┘     ├─────────────────────┤
                                                    │ BLUE                │
                                                    └─────────────────────┘
```
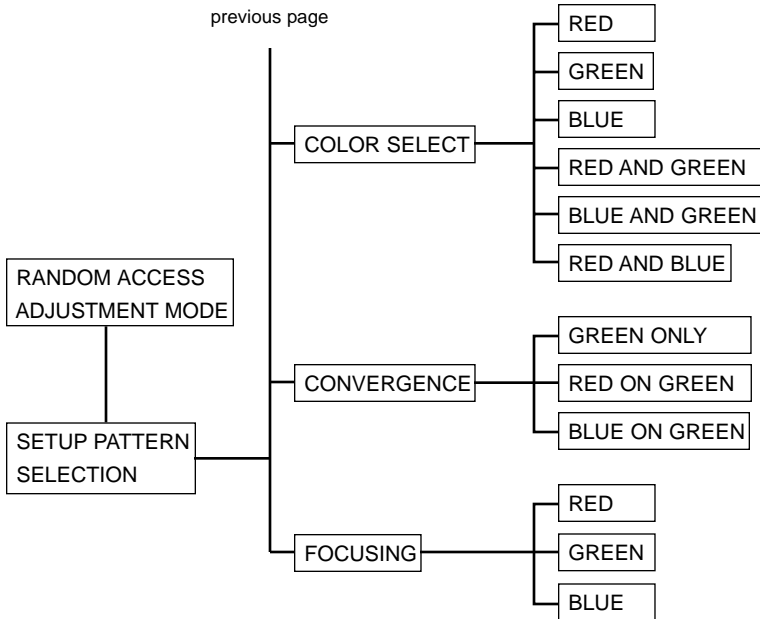
Selecting Setup Pattern

Set up of the Selected Setup Pattern

If an external source is connected to the projector, menu 1 will be displayed.
To select the desired setup pattern, perform the following:
1   Push the cursor keys ↑ or ↓ to highlight the desired setup pattern
2   Press ENTER to select.
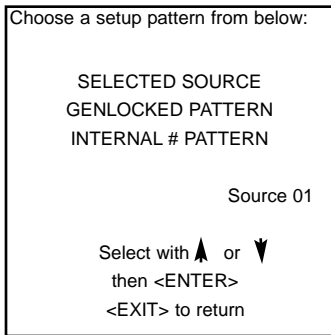
```
┌─────────────────────────────────────┐
│ Choose a setup pattern from below:   │
│                                      │
│                                      │
│        SELECTED SOURCE               │
│       GENLOCKED PATTERN              │
│       INTERNAL # PATTERN             │
│                                      │
│                                      │
│                   Source 01          │
│                                      │
│      Select with ↑  or  ↓            │
│          then <ENTER>                │
│         <EXIT> to return             │
│                                      │
└─────────────────────────────────────┘
```
menu 1

Genlocked pattern: internally generated cross hatch pattern, locked on the scan rate of external source.

Internal # pattern: internally generated cross hatch pattern and locked on internal generated sync signals. (No external source necessary)

If no external source is connected to the projector, the internal cross hatch pattern menu will be displayed.

Note: The menus in this manual are created for an external source, connected to one of the inputs, and the 'Genlocked Pattern' is selected.

Internal Cross Hatch Pattern

When Using The Internal Cross Hatch Pattern

The Internal # pattern menu will be displayed if the internal cross hatch pattern has been selected or if no source is connected to the projector.

Factory Preset Frequencies

The table below lists the 14 fixed factory preset frequencies available.
Another 8 blocks are custom programmable.

To select a desired cross hatch frequency, perform the following:
1   Push the cursor keys ↑ or ↓ to highlight the desired cross hatch frequency (menu 1).
2   Push the cursor keys ← or → to scroll to another page.
3   Press **ENTER** if the desired block is selected.

kHz/Hz
31.2/50	EDTV
31.5/60	IDTV (Line Doubled)
31.2/50	HDTV EUREKA
31.5/60	HDTV ATV
33.7/60	HDTV HIVISION (1080i/540p)
15.8/60	EGA 1
21.8/60	EGA 2
61.0/76	VGA 1,2
35.5/87	VGA 4
44.2/70	Super VGA 2
48.5/60	Super VGA 1
61.0/76	Super VGA 3
72.1/67	Super VGA 4
89.3/67	SUN 3/260

```
          INTERNAL # PATTERN
kHz/Hz
15.6/50          PAL/SECAM
15.7/60          NTSC
31.2/50          EDTV
31.5/60          IDTV
31.2/50          HDTV EUREKA
31.5/60          HDTV ATV


       Select with ↑ or ↓
        then <ENTER>
        <EXIT> to return
```

menu 1

Random Access Adjustment Mode Selection Menu

What is possible?

This is the main menu for the Random Access adjustment mode.
Through this menu, the following adjustments and features are accessible:

- Picture Tuning
> Sync slow/fast(only for RGB inputs)
> Color Balance
> Peaking
> Clamp Tuning
- Geometry
- Convergence
- Focusing
- Color select

```
┌─────────────────────────────┐
│      RANDOM ACCESS          │
│     ADJUSTMENT MODE         │
│                             │
│     PICTURE TUNING          │
│       GEOMETRY              │
│     CONVERGENCE             │
│       FOCUSING              │
│     COLOR SELECT            │
│                             │
│   Select with ▲  or  ▼      │
│     then <ENTER>            │
│     <EXIT> to return        │
└─────────────────────────────┘
```
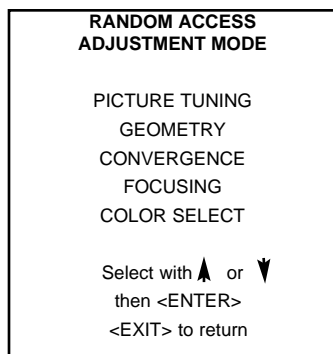
menu 1

Picture Tuning

Start up the Picture Tuning

1   Push the cursor keys ▲ or ▼ to highlight Picture tuning (menu 1).
2   Press ENTER.
     The Picture tuning menu will be displayed.
     Depending on the input source, the 'Picture tuning' menu will display different items (menu 2).

     - Color Balance
     - Sync slow/fast
     - Peaking
     - Clamp Tuning

```
┌─────────────────────────────┐
│      RANDOM ACCESS          │
│     ADJUSTMENT MODE         │
│                             │
│   ▐ PICTURE TUNING ▌        │
│       GEOMETRY              │
│     CONVERGENCE             │
│       FOCUSING              │
│     COLOR SELECT            │
│                             │
│   Select with ▲  or  ▼      │
│     then <ENTER>            │
│     <EXIT> to return        │
└─────────────────────────────┘
```
menu 1

```
┌─────────────────────────────┐
│      PICTURE TUNING         │
│                             │
│                             │
│     COLOR BALANCE           │
│      SYNC: FAST             │
│       PEAKING               │
│     CLAMP TUNING            │
│                             │
│   Select with ▲  or  ▼      │
│     then <ENTER>            │
│     <EXIT> to return        │
└─────────────────────────────┘
```
menu 2

34
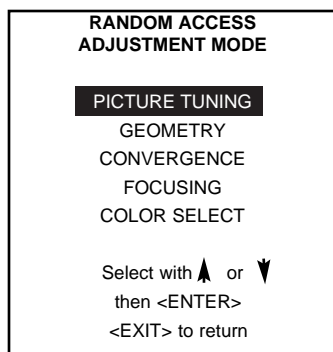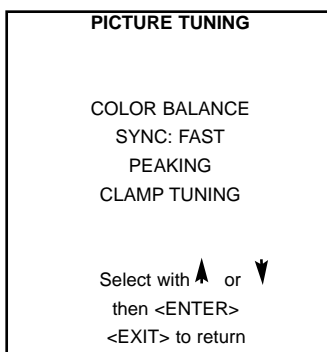
Color Balance

What can be done?

The Color Balance function is used to select or adjust the color temperature of white used by the projector.
The Color Balance can be adjusted on two different ways :
- fixed color balance. You have the choice between 3200 K (reddish), 4900 K, 6500 K (white) or 9300 K (bluish).
- Custom white and black balance.

How to select the Color Balance?

1   Push the cursor keys ↑ or ↓ to highlight 'Color Balance' (menu 1).
2   Press ENTER to select.
     The color balance menu will be displayed (menu 2).

```
        PICTURE TUNING


       [ COLOR BALANCE ]
          SYNC: FAST
           PEAKING
         CLAMP TUNING


      Select with ↑  or  ↓
        then <ENTER>
       <EXIT> to return
```
menu 1
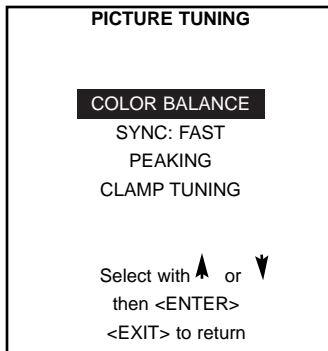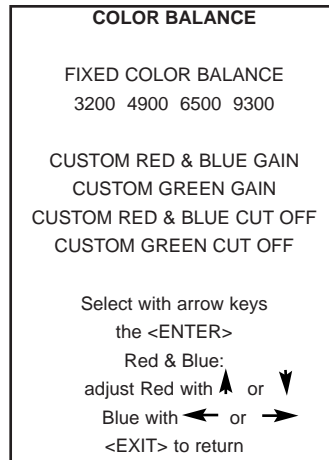
```
         COLOR BALANCE

       FIXED COLOR BALANCE
       3200  4900  6500  9300

     CUSTOM RED & BLUE GAIN
       CUSTOM GREEN GAIN
   CUSTOM RED & BLUE CUT OFF
     CUSTOM GREEN CUT OFF


      Select with arrow keys
         the <ENTER>
         Red & Blue:
      adjust Red with ↑  or  ↓
        Blue with ←  or  →
        <EXIT> to return
```
menu 2

Fixed Color Balance

To select a fixed color balance, perform the following:
1. Highlight one of the 4 preprogrammed color temperatures with the cursor keys and
2. press **ENTER** to display the image with the desired color balance.

Custom Color Balance

The custom color balance adjustment can be divided in two parts, the 'gain' adjustment and the 'cut off' adjustment.

Gain adjustment (affects the brightest areas of the image)
1. Push the cursor key ↑ or ↓ to select 'Custom Red & Blue gain' (menu 1).
2. Press **ENTER** to activate the adjustment.
3. Push the cursor key ↑ or ↓ to adjust the red gain
4. Push the cursor key ← or → to adjust the blue gain. A bar scale indicates the amount of adjustment.
5. Press ENTER to return to the Color Balance menu.
6. Push the cursor key ↑ or ↓ to select 'Custom Green Gain' (menu 2).
7. Press ENTER to activate the adjustment.
8. Push the cursor key ↑ or ↓ to adjust the green gain.
9. Press ENTER to return to the Color Balance menu.

Cut Off Adjustment

1. Push the cursor key ↑ or ↓ to select 'Custom Red & Blue Cut off' (menu 3).
2. Press ENTER to activate the adjustment.
3. Push the cursor key ↑ or ↓ to adjust the red cut-off
4. Push the cursor key ← or → to adjust the blue cut-off.
5. Press ENTER to return to the Color Balance menu.
6. Push the cursor key ↑ or ↓ to select 'Custom Green cut off' (menu 4).
7. Press ENTER to activate the adjustment.
8. Push the cursor key ↑ or ↓ to adjust the green cut-off.
9. Press ENTER to return to the Color Balance menu.

When the color balance is adjusted, press **EXIT** to return.

COLOR BALANCE	COLOR BALANCE	COLOR BALANCE	COLOR BALANCE
FIXED COLOR BALANCE	FIXED COLOR BALANCE	FIXED COLOR BALANCE	FIXED COLOR BALANCE
3200 4900 6500 9300	3200 4900 6500 9300	3200 4900 6500 9300	3200 4900 6500 9300
CUSTOM RED & BLUE GAIN	CUSTOM RED & BLUE GAIN	CUSTOM RED & BLUE GAIN	CUSTOM RED & BLUE GAIN
CUSTOM GREEN GAIN	**CUSTOM GREEN GAIN**	CUSTOM GREEN GAIN	CUSTOM GREEN GAIN
CUSTOM RED & BLUE CUT OFF	CUSTOM RED & BLUE CUT OFF	**CUSTOM RED & BLUE CUT OFF**	CUSTOM RED & BLUE CUT OFF
CUSTOM GREEN CUT OFF	CUSTOM GREEN CUT OFF	CUSTOM GREEN CUT OFF	**CUSTOM GREEN CUT OFF**
Select with arrow keys the <ENTER> Red & Blue: adjust Red with ↑ or ↓ Blue with ← or → <EXIT> to return	Select with arrow keys the <ENTER> Red & Blue: adjust Red with ↑ or ↓ Blue with ← or → <EXIT> to return	Select with arrow keys the <ENTER> Red & Blue: adjust Red with ↑ or ↓ Blue with ← or → <EXIT> to return	Select with arrow keys the <ENTER> Red & Blue: adjust Red with ↑ or ↓ Blue with ← or → <EXIT> to return
menu 1	menu 2	menu 3	menu 4

Sync Fast/Slow Adjustments

What can be done?
The sync function is used to minimize horizontal jittering or tearing at the top to the displayed image.
The sync slow/fast function is only available for RGB sources.

How to setup the sync function?
To change the Sync setting, perform the following:
1. Push the cursor keys ↑ or ↓ to select Sync (menu 1)
2. Press ENTER to toggle between FAST and SLOW.

Note: SYNC is normally used in the SLOW position. The FAST position is used to compensate for unsteady sync pulses from older video playback equipment such as VCRs.

PICTURE TUNING
COLOR BALANCE
SYNC: FAST
PEAKING
CLAMP TUNING: normal
Select with ↑ or ↓ then <ENTER> <EXIT> to return
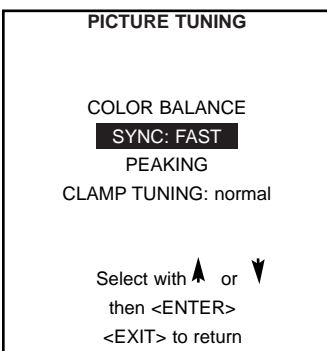
menu 1

Peaking

What can be done?
Peaking improves the contours in an projected image.

How to set up?
To change the peaking setting, perform the following:
1. Push the cursor key ↑ or ↓ to select Peaking (menu 1).
2. Press **ENTER** to display the peaking menu (menu 2).
   During the creation of new settings for a RGB source the corresponding peaking is switched on as default.

The following frequency areas are available:
  15 kHz - 45 kHz : Low frequency peaking.
  45 kHz - 85 kHz : Mid frequency peaking.
  85 kHz - 110 kHz : High frequency peaking.

If another peaking is desired or switch off, perform the following:
1. Push the cursor key ↑ or ↓ to select to select the desired frequency area or off (menu 2).
2. Press **ENTER** to activate.

```
+------------------------------+
|       PICTURE TUNING         |
|                              |
|                              |
|       COLOR BALANCE          |
|        SYNC: FAST            |
|        [PEAKING]             |
|   CLAMP TUNING: normal       |
|                              |
|                              |
|     Select with ↑  or  ↓     |
|        then <ENTER>          |
|      <EXIT> to return        |
+------------------------------+
```
menu 1

```
+------------------------------+
|          PEAKING             |
|                              |
|                              |
|           OFF                |
|       LOW FREQUENCY          |
|       MID FREQUENCY          |
|       HIGH REQUENCY          |
|                              |
|                              |
|     Select with ↑  or  ↓     |
|        then <ENTER>          |
|      <EXIT> to return        |
+------------------------------+
```
menu 2
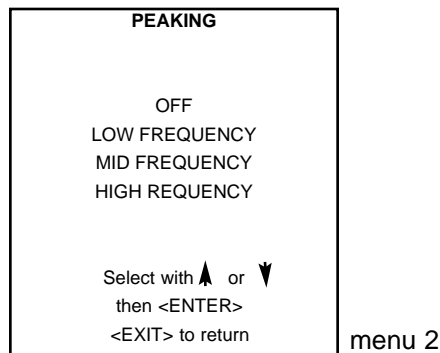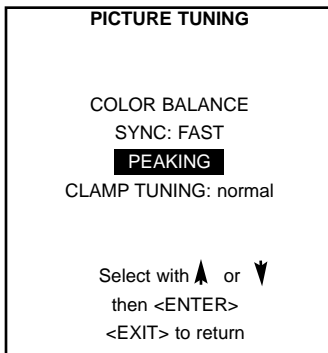
Clamp Tuning

What can be done?
The clamp tuning can be switch between 'Normal' and 'Restoration'.
Normal: for all standard sources and all sources with a backporch > 0.8 µs or for sources with noise and spikes in the signal.
Restoration: for standard sources with a backporch between 0.4 µs and 0.8 µs or for sources with sync separate or sync on green.

How to set up?
1. Push the cursor key ↑ or ↓ to select Clamp Tuning (menu 1).
2. Press ENTER to toggle between 'Normal' and 'Restoration'.
3. Press EXIT to return to the picture tuning menu.

```
+------------------------------+
|       PICTURE TUNING         |
|                              |
|                              |
|       COLOR BALANCE          |
|        SYNC: FAST            |
|         PEAKING              |
|   CLAMP TUNING: [normal]     |
|                              |
|     Select with ↑  or  ↓     |
|        then <ENTER>          |
|      <EXIT> to return        |
+------------------------------+
```
menu 1
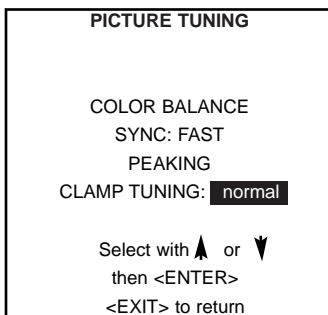
Geometry Adjustments

What can be done?

The geometry adjustments have to be done only on the green image. These adjustments are automatically implemented for the other color images. The following adjustments can be adjusted Left-right (EW) and Top-Bottom Corrections, Blanking, Horizontal Amplitude, Vertical Amplitude, Vertical Linearity and Horizontal Phase.

Start Up

To start up the geometry corrections, perform the following:
1. Push the cursor key ⬆ or ⬇ to highlight 'Geometry' (menu 1).
2. Press ENTER to select.
   The Geometry menu will be displayed on the screen (menu 2).

```
┌─────────────────────────────┐          ┌─────────────────────────────┐
│      RANDOM ACCESS          │          │          GEOMETRY           │
│     ADJUSTMENT MODE         │          │                             │
│                             │          │          H PHASE            │
│                             │          │        RASTER SHIFT         │
│       PICTURE TUNING        │          │       LEFT-RIGHT (E-W)      │
│         GEOMETRY            │          │     LEFT SIDE CORRECTION    │
│       CONVERGENCE           │          │       TOP-BOTTOM (N-S)      │
│         FOCUSING            │          │          H SIZE             │
│       COLOR SELECT          │          │        V LINEARITY          │
│                             │          │          V SIZE             │
│     Select with ▲ or ▼      │          │         BLANKING            │
│      then <ENTER>           │          │                             │
│     <EXIT> to return        │          │     Select with ▲ or ▼      │
└─────────────────────────────┘ menu 1   │      then <ENTER>           │ menu 2
                                         │     <EXIT> to return        │
                                         └─────────────────────────────┘
```
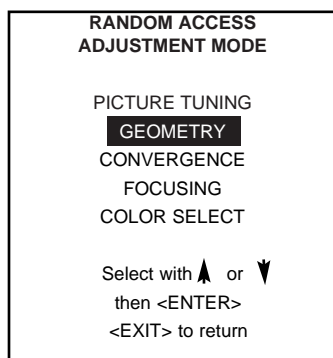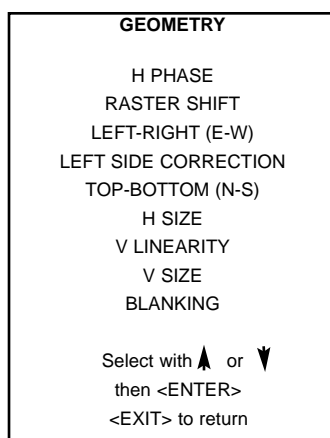
Important

The convergence corrections are disabled during geometry corrections. The blanking corrections are only enabled during the blanking adjustments.

Horizontal Phase Adjustments

Start Up

1. Push the cursor key ⬆ or ⬇ to highlight 'H Phase' (menu 1).
2. Press ENTER to activate.
   The external image with a text box in the middle will be projected.

Note: No horizontal phase adjustment is available on the internal # pattern.

How to adjust?

If the raster shift is correctly adjusted, the H Phase text box is projected in the middle of the raster. The "><" icon indicates the middle of the raster.
Adjust the H Phase control until the middle of the projected image is equal with the middle of >< icon. It is recommended that an external cross-hatch be used for this adjustment.
Image 1 : Push the cursor key to the right to correct.
Image 2 : Push the cursor key to the left to correct.

Note: If the genlocked pattern was selected during the start up of the random access mode, the external source will be displayed.

A bar scale and a number indicator (between 0 and 100) on the screen give a visual indication of the horizontal phase adjustment.

GEOMETRY

H PHASE
RASTER SHIFT
LEFT-RIGHT (E-W)
TOP-BOTTOM (N-S)
SIZE
V LINEARITY
BLANKING

Select with ▲ or ▼
then <ENTER>
<EXIT> to return

menu 1

><
H PHASE
70

image 1

><
H PHASE
70
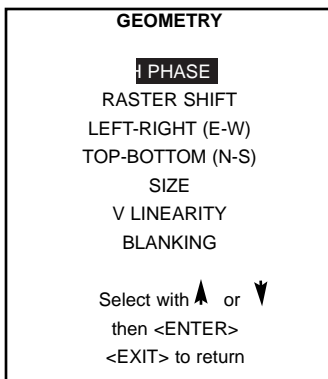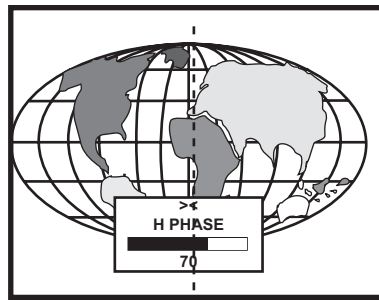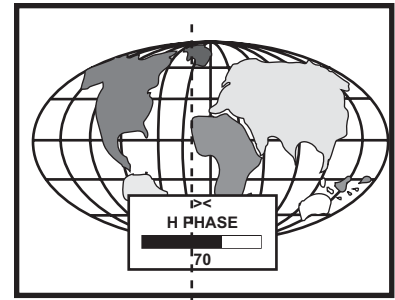
image 2

Raster Shift Adjustments

What has to be done?
The green raster must be centered both horizontally and vertically on the center of the CRT surface. To center the green raster, look into the green lens and use the cursor keys to move the raster.

CAUTION: It is necessary to look into the lenses to perform these adjustments. To avoid eye discomfort while looking into the lenses, reduce the contrast and gradually increase the brightness level until the raster becomes visible on the face of the CRT.

Start up
To start the adjustment (image 1):
1. Push the cursor key ▲ or ▼ to highlight Raster Shift (menu 1).
2. Press **ENTER** to display the coarse shift menu (menu 2)
3. Select first green horizontal and adjust.
4. Continue with green vertical.
5. Shift red and blue on green.

Note: Horizontal and Vertical shifts for Red and Blue should end up with a setting close to 50%. If these settings are significantly greater or lesser than 50%, contact a Runco authorized service technician.

Warning: In order to ensure maximum CRT longevity and to avoid CRT damage, do not shift the raster outside the phosphor area of the CRT.

```
      GEOMETRY                    COARSE SHIFT
                                                              Forbidden Area
       H PHASE                  GREEN HORIZONTAL
   RASTER SHIFT                  GREEN VERTICAL
   LEFT-RIGHT (E-W)               RED VERTICAL                             Projected Raster
 LEFT SIDE CORRECTION            BLUE VERTICAL
 TOP-BOTTOM (N-S)
      H SIZE                                                               CRT Faceplate
    V LINEARITY                                                            Border
      V SIZE
     BLANKING                    Select with ▲ or ▼                        Phosphor
                                  then <ENTER>                             Border
 Select with ▲ or ▼              <EXIT> to return
   then <ENTER>
  <EXIT> to return                    menu 2              image 1

      menu 1
```
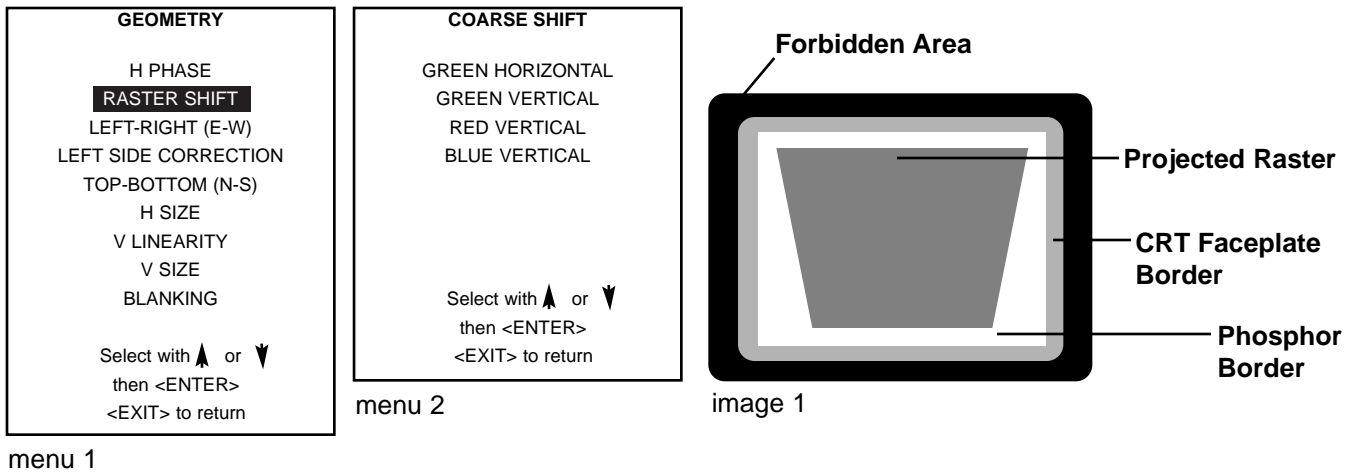
Left-Right (East-West) Adjustments

What can be adjusted?

Left-right and center adjustments affect only the vertical lines of the projected image. The skew, the bow, the keystone and the seagull distortion can be adjusted.

Start up

To start up the left-right and center adjustments, follow the next procedure :
1. Push the cursor key ▲ or ▼ to highlight LEFT-RIGHT (E/W) (image 1).
2. Press **ENTER** to select. The 'Left-Right' menu will be displayed (menu 2).

```
      GEOMETRY                        LEFT-RIGHT (E-W)

       H PHASE                     V CENTERLINE BOW
    RASTER SHIFT                   V CENTERLINE SKEW
   LEFT-RIGHT (E-W)                    SIDE BOW
 LEFT SIDE CORRECTION                SIDE KEYSTONE
 TOP-BOTTOM (N-S)                  SEAGULL CORRECTION
      H SIZE
    V LINEARITY               Warning : Use this correction to adjust
      V SIZE                       the right side of the image !
     BLANKING

 Select with ▲ or ▼                Select with ▲ or ▼
   then <ENTER>                       then <ENTER>
  <EXIT> to return                   <EXIT> to return
                    menu 1                                menu 2
```
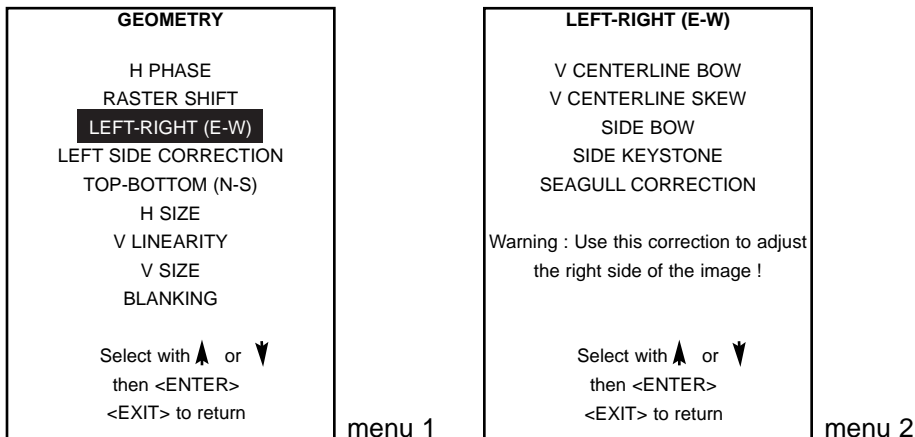
Note: Only the green image is displayed while making left-right adjustments. The red and blue images will automatically be corrected in the same manner. Convergence corrections are automatically disabled for the duration of these adjustments.

Which adjustment can be executed?

The following adjustments can be executed
- vertical centerline bow
- vertical centerline skew
- side keystone (left - right)
- side bow (left - right)

All adjustment are indicated on the screen with the function name, a bar scale and a number between 0 and 100. Adjust the next alignments until the vertical lines are straight.

How to enter an alignment?

To enter an alignment:
1. Push the cursor key ↑ or ↓ to highlight a function
2. Press ENTER to activate this function.
3. Press EXIT to return.

Warning
Use this correction to adjust the right side of the image.

```
      LEFT-RIGHT

   V CENTERLINE BOW
   V CENTERLINE SKEW
        SIDE BOW
     SIDE KEYSTONE
  SEAGULL CORRECTION


   Select with ↑ or ↓
      then <ENTER>
     <EXIT> to return
```

menu 2

Corrects for curvature of the vertical lines
in the middle of the image.

Corrects for tilting of the vertical lines
in the middle of the image.

Corrects for curvature of the
vertical lines on the right side.

Corrects for keystone geometry of the
vertical lines on the right side.

Correct by pushing the
cursor keys to the right.

Correct by pushing the
cursor keys to the left.

Seagull Correction

What can be done?

Use this correction only if, after adjusting the vertical lines with the side bow or side keystone, an 'S' curve is visible on the left and the right side of the image. The default value on the bar scale for this correction is 50.

Start up

To correct the Seagull Correction :
1. Push the cursor key ↑ or ↓ to highlight SEAGULL CORRECTION (menu 1)
2. Press **ENTER** to activate.
   Eliminate the deformation by pushing the cursor key ← or → until a straight line is obtained (image 1).
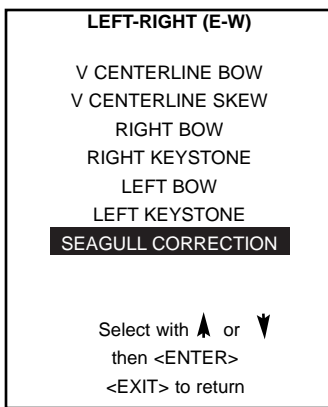
```
      LEFT-RIGHT (E-W)

    V CENTERLINE BOW
    V CENTERLINE SKEW
        RIGHT BOW
      RIGHT KEYSTONE
        LEFT BOW
       LEFT KEYSTONE
    SEAGULL CORRECTION



    Select with ↑ or ↓
       then <ENTER>
     <EXIT> to return          menu 2
```
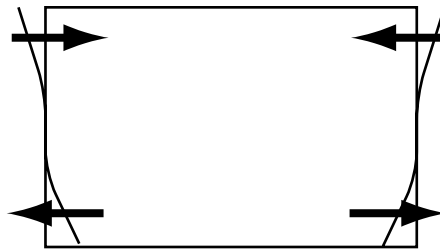
image 1

Left Side Correction

What can be done?
Fine tuning on the left side of the image for bow and keystone correction. Only the green image is displayed while making the left side adjustments. The red and blue images will automatically be corrected in the same manner. The convergence corrections are automatically disabled for the duration of these adjustments.

Warning
Before starting the left side correction, insure that the side bow and keystone adjustments are done prior to these fine adjustments!

Start Up
1. Push the cursor key ↑ or ↓ to highlight 'Left Side Correction' (menu 1).
2. Press ENTER to display the Left Side Correction menu (menu 2).

```
        GEOMETRY

        H PHASE
       RASTER SHIFT


   LEFT SIDE CORRECTION
    TOP-BOTTOM (N-S)
        H SIZE
      V LINEARITY
        V SIZE
       BLANKING


    Select with ↑ or ↓
       then <ENTER>
     <EXIT> to return       menu 1
```

```
     LEFT SIDE CORRECTION


      LEFT KEYSTONE
        LEFT BOW

   Ensure that the side bow and key-
   stone adjustments are done prior to
      these fine adjustments!


     Select with ↑ or ↓
        then <ENTER>
      <EXIT> to return
```
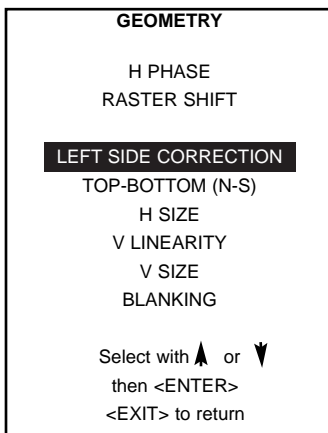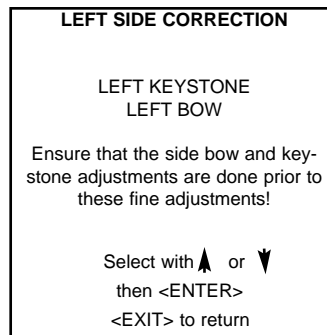
Left Side Adjustments

1. Push the cursor key ↑ or ↓ to highlight the desired correction (menu 1).
2. Press **ENTER** to start the adjustment.
3. Press **EXIT** to return when the adjustment is finished.

LEFT SIDE CORRECTION

LEFT KEYSTONE
LEFT BOW

Ensure that the side bow and key-
stone adjustments are done prior to
these fine adjustments!

Select with ↑ or ↓
then <ENTER>
<EXIT> to return

Corrects the bow geometry
distortion of the vertical lines.

Corrects the keystone geometry
distortion of the vertical lines.

Correct by pushing the   Correct by pushing the
cursor keys to the right   cursor keys to the right
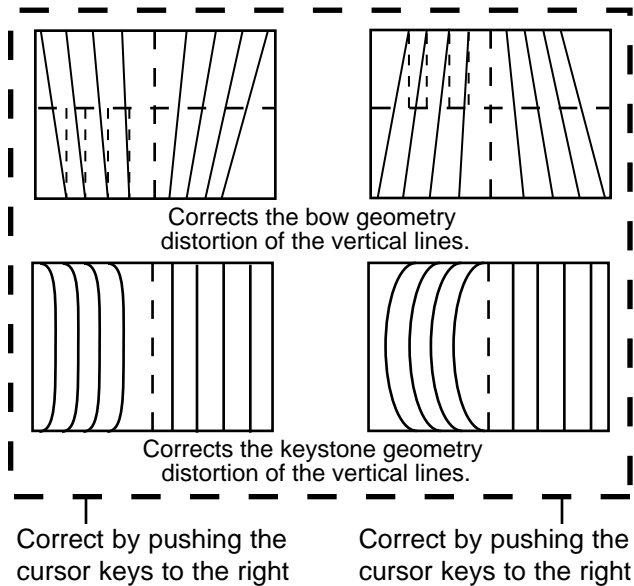
Top-Bottom (North-South) Adjustments

What can be adjusted?
Top-Bottom and center adjustments affect only the horizontal lines of the projected image. The skew, the bow, the keystone and the seagull correction can be adjusted.

Start Up
To start up the Top-Bottom and center corrections, follow the next procedure :

1. Push the cursor key ↑ or ↓ to highlight TOP-BOTTOM (N/S) (menu 1).
2. Press **ENTER** to select. The Top-Bottom menu will be selected (menu 2).

GEOMETRY

H PHASE
RASTER SHIFT
LEFT-RIGHT (E-W)
LEFT SIDE CORRECTION
TOP-BOTTOM (N-S)
H SIZE
V LINEARITY
V SIZE
BLANKING

Select with ↑ or ↓
then <ENTER>
<EXIT> to return

menu 1

TOP-BOTTOM (N-S)

H CENTERLINE BOW
H CENTERLINE SKEW
TOP KEYSTONE
TOP BOW
BOTTOM KEYSTONE
BOTTOM BOW
SEAGULL CORRECTION

Select with ↑ or ↓
then <ENTER>
<EXIT> to return

menu 2

Note:
Only the green image is displayed while making top-botton adjustments. The red and blue images will automatically be corrected in the same manner.
Convergence corrections are automatically disabled for the duration of these adjustments.

Which adjustment can be executed?
The following adjustments can be executed

- Horizontal centerline bow
- Horizontal centerline skew
- Top bow
- Top keystone
- Bottom bow
- Bottom keystone

All adjustments are indicated on the screen with the function name, a bar scale and a number between 0 and 100. Adjust the next alignments until the horizontal lines are straight.

How to enter an alignment?
To enter an alignment:
1. Push the cursor key ↑ or ↓ to highlight a function
2. Press **ENTER** to activate this function.
3. Press **EXIT** to return.

TOP-BOTTOM

H CENTERLINE BOW
H CENTERLINE SKEW
TOP BOW
TOP KEYSTONE
BOTTOM BOW
BOTTOM KEYSTONE

Select with ↑ or ↓
then <ENTER>
<EXIT> to return

Corrects for curvature of the vertical lines
in the middle of the image.

Corrects for tilting of the horizontal lines
in the middle of the image.

Corrects for curvature of the
horizontal lines on the upper side.

Corrects the keystone geometry correction
of the horizontal lines on the upper side.

Connects for curvature of the
horizontal lines on the lower side

Corrects the keystone geometry correction
of the horizontal lines on the lower side.

Correct by pushing
the cursor key down

Correct by pushing
the cursor key up

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Seagull correction

What can be done?

Use this correction after the image has been adjusted with top and bottom bow and keystone. If an "S" curve on top and bottom of the image is visible, proceed to the seagull correction. Due to interaction, it is possible that the top and bottom bow have to be readjusted after adjusting the seagull correction to obtain an improved image. The default value on the bar scale of this correction is 50.

Start up

To correct the Seagull Correction :
1. Push the cursor key ↑ or ↓ to highlight SEAGULL CORRECTION (menu 1)
2. Press ENTER to activate.
   Eliminate the deformation by pushing the cursor key ↑ or ↓ until a straight line is obtained (image 1).

```
        TOP-BOTTOM (N-S)

     H CENTERLINE BOW
     H CENTERLINE SKEW
        TOP KEYSTONE
           TOP BOW
      BOTTOM KEYSTONE
         BOTTOM BOW
     SEAGULL CORRECTION


      Select with ↑  or  ↓
        then <ENTER>
       <EXIT> to return
```
menu 2
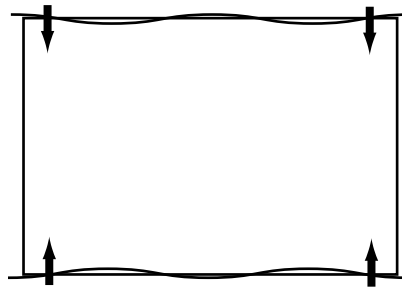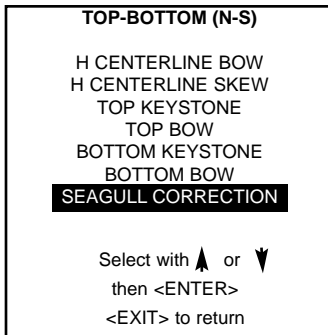
image 1

Horizontal Size Adjustments

What can be done?
To adjust the horizontal picture size.

Start up
1. Push the cursor key ↑ or ↓ to highlight 'H Size' (menu 1).
2. Press **ENTER** to activate (menu 2).
3. Push the cursor key ← or → until the exact image width is obtained (horizontal size) (image 1).

Note:
        - If the internal # pattern was selected, this pattern remains on the screen.
        - If the genlocked pattern was selected, the external source will be displayed.
A bar scale and a numeric indicator help to gauge the size adjustment.

```
           GEOMETRY

          H PHASE
        RASTER SHIFT
       LEFT-RIGHT (E-W)
    LEFT SIDE CORRECTION
      TOP-BOTTOM (N-S)
           H SIZE
         V LINEARITY
           V SIZE
          BLANKING


      Select with ↑  or  ↓
        then <ENTER>
       <EXIT> to return
```
menu 1

```
H SIZE
██████▊     
     70
```
menu 2

45
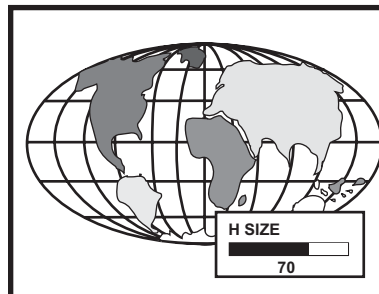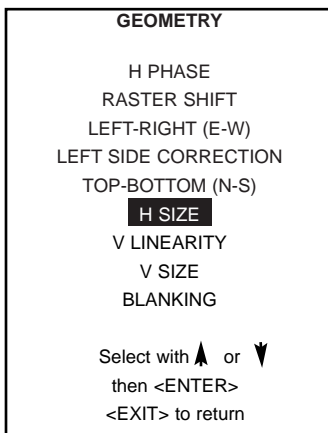
Vertical Linearity Adjustments

What can be done?

The vertical linearity adjustment function corrects for vertical non-linearities which extend from the center of the image to the top and bottom of the image.

Start Up

To start up the vertical linearity adjustment:

1. Push the cursor key ↑ or ↓ to highlight V Linearity (menu 1).
2. Press **ENTER** to activate (menu 2).
   Adjust the vertical linearity with the cursor keys until the distances between the horizontal lines of the set up pattern are equal from top to bottom (image 1).
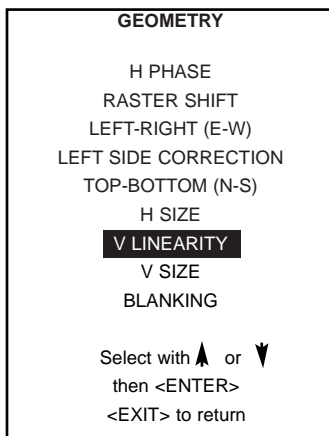
menu 1
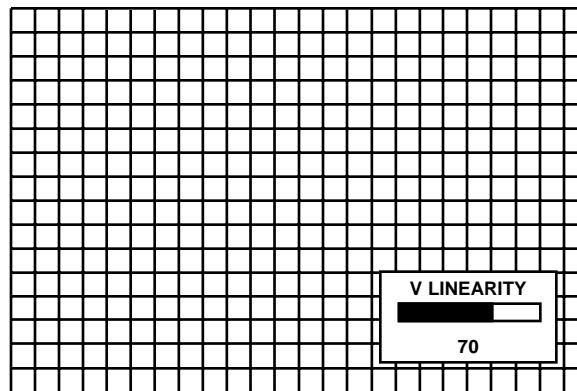
menu 2
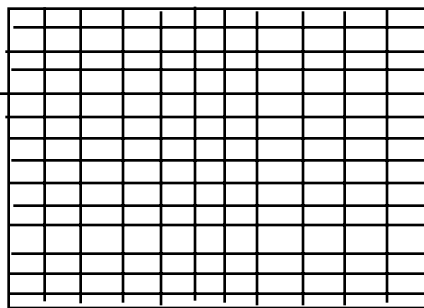
image 1

Vertical Size Adjustments

What can be done?
To adjust the vertical picture size.

Start up
1. Push the cursor key ↑ or ↓ to highlight 'V Size' (menu 1).
2. Press **ENTER** to activate (menu 2).
3. Push the cursor key ↑ or ↓ until the correct image height is obtained. (image 1).

Note:
- If the internal # pattern was selected, this pattern remains on the screen.
- If the genlocked pattern was selected, the external source will be displayed.
A bar scale and a numeric indicator help to gauge the size adjustment.
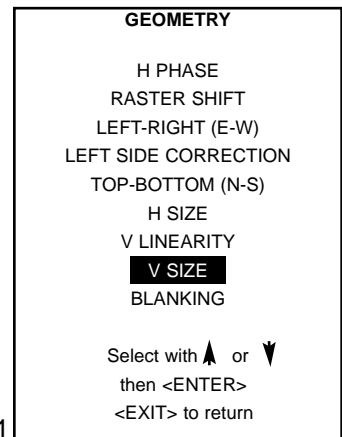
```
           GEOMETRY

           H PHASE
         RASTER SHIFT
        LEFT-RIGHT (E-W)
      LEFT SIDE CORRECTION
       TOP-BOTTOM (N-S)
           H SIZE
         V LINEARITY
          [V SIZE]
          BLANKING

       Select with ▲ or ▼
         then <ENTER>
        <EXIT> to return
```
menu 1

Blanking Adjustments

What can be done?

Blanking adjustments affect only the edges of the projected image and are used to frame the projected image on to the screen and to hide or black out unwanted information (or noise). A 0% on the bar scale indicates no blanking. The following blanking adjustment are available: Top, Bottom, left and right blanking.

Start Up

To start up the Blanking adjustments, follow the next procedure :

1. Push the cursor key ↑ or ↓ to highlight Blanking (menu 1).
2. Press **ENTER** to display the blanking menu (menu 2).

- If the internal # pattern was selected, this pattern remains on the screen.
- If the genlocked pattern was selected, the external source will be displayed.

```
           GEOMETRY

           H PHASE
         RASTER SHIFT
        LEFT-RIGHT (E-W)
      LEFT SIDE CORRECTION
       TOP-BOTTOM (N-S)
           H SIZE
         V LINEARITY
           V SIZE
         [BLANKING]

       Select with ▲ or ▼
         then <ENTER>
        <EXIT> to return
```
menu 1
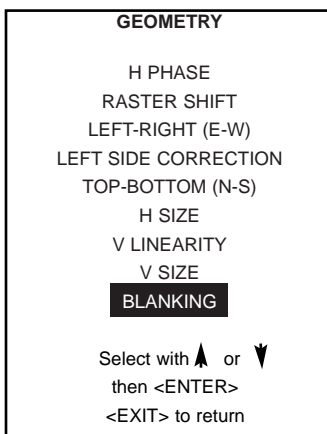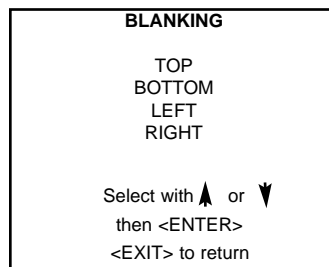
```
           BLANKING

            TOP
           BOTTOM
            LEFT
           RIGHT

       Select with ▲ or ▼
         then <ENTER>
        <EXIT> to return
```
menu 2

How to adjust the Blanking?

Adjust the next blanking alignments until the image is correctly framed or the unwanted information is blanked out (image 1).
To enter a blanking alignment :
1. Push the cursor key ↑ or ↓ to highlight the desired blanking position.
2. Press ENTER to select.
3. Press the cursor key ↑ or ↓ to adjust the blanking.
4. Press ENTER to continue.

Top Blanking

Left Blanking ——

Right Blanking

Bottom Blanking

BLANKING

TOP
BOTTOM
LEFT
RIGHT

Select with ↑ or ↓
then <ENTER>
<EXIT> to return

Adjustment of the blanking on the of the image

Adjustment of the blanking on the bottom of the image

Correct by pushing the cursor keys
up or down

Adjustment of the blanking on the left side

Adjustment of the blanking on the right side

Correct by pushing the cursor keys
to the right or to the left

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Convergence Adjustments

What has to be done?

Convergence adjustments affect both the horizontal and vertical lines of the setup pattern. These adjustments are performed on the red image while superimposed on the green image and then on the blue image while superimposed on the green image. The screen is devided into 81 areas

Start up

1. Push the cursor key ↑ or ↓ to select desired adjustment.
2. Press **ENTER** to activate.

How to adjust?

1. Use the cursor keys to move the box to the desired zone.
2. Press **ENTER** to begin the convergence adjustment. Start the convergence adjustment in the center, then move outward.
3. Use the cursor keys to make horizontal or vertical convergence adjustments in the selected zone (image 1).
4. Press **ENTER** to move to another zone.
5. Press **EXIT** to return to the convergence menu.

RANDOM ACCESS ADJUSTMENT MODE

PICTURE TUNING
GEOMETRY
CONVERGENCE
FOCUSING
COLOR SELECT

Select with ↑ or ↓
then <ENTER>
<EXIT> to return

menu 1

CONVERGENCE

GREEN ONLY
RED ON GREEN
BLUE ON GREEN

Select with ↑ or ↓
then <ENTER>
<EXIT> to return

menu 2

CONVERGENCE

SEL : select area using arrow keys
ADJ : adjust area using arrow keys

Toggle between
SEL and ADJ
with <ENTER>
<ENTER> continue
<EXIT> to return

menu 3

CONVERGE ADJUSTMENT

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image 1

Green Image

Red Image

image 2

Focusing

What can be done?

After the lenses are mechanically correct focused, the CRT's can be electronically focused until the image is on each point.

Start Up

1. Push the cursor key ↑ or ↓ to highlight 'Focusing' (menu 1).
2. Press **ENTER** to display the focusing menu (menu 2).
   The focusing has to be done for the three colors separately.
   Start with Green and continue with Red and Blue.
   The following items can be adjusted per color (menu 3):
   - Midpoint focusing
   - Top image focusing
   - Bottom image focusing
   - Left image focusing
   - Right image focusing

```
    RANDOM ACCESS
   ADJUSTMENT MODE


    PICTURE TUNING
      GEOMETRY
     CONVERGENCE
      FOCUSING
    COLOR SELECT


   Select with ↑ or ↓
     then <ENTER>
   <EXIT> to return
```
menu 1

```
       FOCUSING


        RED
       GREEN
        BLUE


    BLUE ON SOURCE



   Select with ↑ or ↓
     then <ENTER>
   <EXIT> to return
```
menu 2

```
       FOCUSING


      MIDPOINT
        TOP
      BOTTOM
       LEFT
       RIGHT



   Select with ↑ or ↓
     then <ENTER>
   <EXIT> to return
```
menu 3
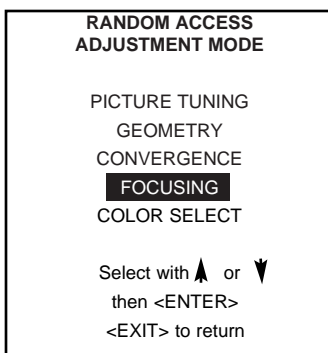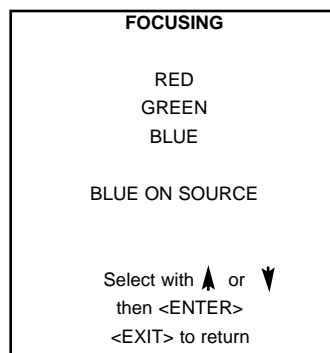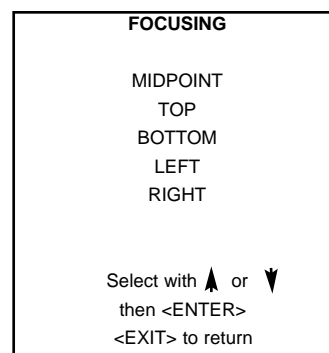
Midpoint Focusing

1. Push the cursor key ↑ or ↓ to highlight 'Midpoint' (menu 1).
2. Press **ENTER** to start up the midpoint focusing.
3. Push the cursor key ← or → until the center of the image is sharp.
4. Press **ENTER** to return to the focusing menu.
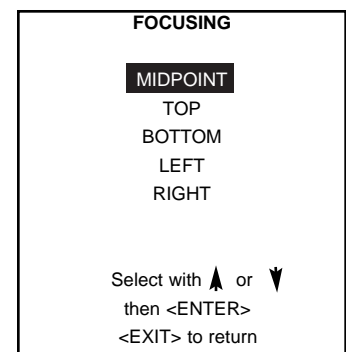
```
       FOCUSING

      MIDPOINT
        TOP
      BOTTOM
       LEFT
       RIGHT


   Select with ↑ or ↓
     then <ENTER>
   <EXIT> to return
```
menu 1

Top Image Focusing

1. Push the cursor key ↑ or ↓ to highlight 'Top' (menu 1).
2. Press **ENTER** to start up the top image focusing.
3. Push the cursor key ← or → until the upper part of the image is sharp.
4. Press **ENTER** to return to the focusing menu.

```
         FOCUSING

        MIDPOINT
          TOP
         BOTTOM
          LEFT
          RIGHT


    Select with ↑ or ↓
      then <ENTER>
    <EXIT> to return
```
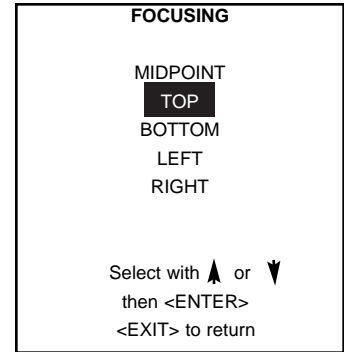
menu 1

Bottom Image Focusing

1. Push the cursor key ↑ or ↓ to highlight 'Bottom' (menu 1).
2. Press **ENTER** to start up the bottom image focusing.
3. Push the cursor key ← or → until the lower part of the image is sharp.
4. Press **ENTER** to return to the focusing menu.

```
         FOCUSING

        MIDPOINT
          TOP
         BOTTOM
          LEFT
          RIGHT


    Select with ↑ or ↓
      then <ENTER>
    <EXIT> to return
```
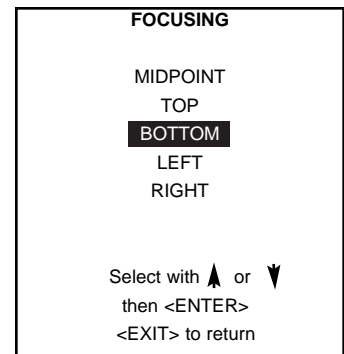
menu 1

Left Image Focusing

1. Push the cursor key ↑ or ↓ to highlight 'Left' (menu 1).
2. Press **ENTER** to start up the top image focusing.
3. Push the cursor key ← or → until the left part of the image is sharp.
4. Press **ENTER** to return to the focusing menu.

```
         FOCUSING

        MIDPOINT
          TOP
         BOTTOM
          LEFT
          RIGHT


    Select with ↑ or ↓
      then <ENTER>
    <EXIT> to return
```
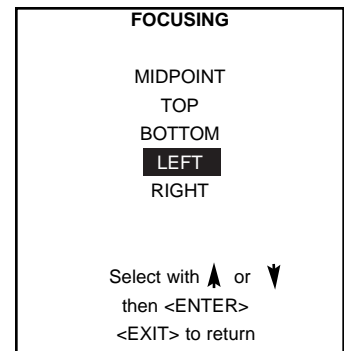
menu 1

Right Image Focusing

1. Push the cursor key ↑ or ↓ to highlight 'Right' (menu 1).
2. Press **ENTER** to start up the right image focusing.
3. Push the cursor key ← or → until the right part of the image is sharp.
4. Press **ENTER** to return to the focusing menu.
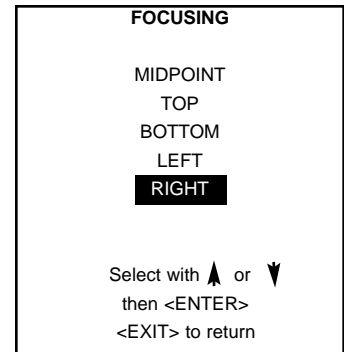
```
          FOCUSING

          MIDPOINT
            TOP
          BOTTOM
           LEFT
          [RIGHT]


      Select with ↑ or ↓
        then <ENTER>
       <EXIT> to return
```
menu 1

Blue on Source

What can be done?
After focusing the three colors, and a yellow discoloring on a normal image is still visible, select blue on source and repeat the steps Midpoint, Top, Bottom, Left and Right. This helps eliminate blue saturation by <u>slightly</u> de-focusing the blue image.

Start Up
1. Push the cursor key ↑ or ↓ to highlight 'Blue on Source' (menu 1).
2. Press **ENTER** to start up.
   Repeat the midpoint, top, bottom, left and right focusing.

Note: It is recommended that a white field pattern be used for this adjustment.
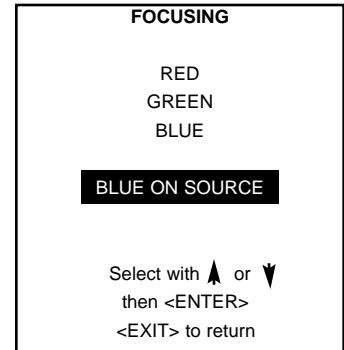
```
          FOCUSING

            RED
           GREEN
            BLUE

      [BLUE ON SOURCE]


      Select with ↑ or ↓
        then <ENTER>
       <EXIT> to return
```
menu 1

Color Select

What can be done?

Only one color (CRT) or a combination of colors can be turned ON or OFF.

Start Up

1. Push the cursor key ↑ or ↓ to highlight 'Color Select' (menu 1).
2. Press **ENTER** to display the color select menu (menu 2).
3. Select the desired color or color combination by pushing the cursor key ↑ or ↓ .
4. Press **ENTER** to select.
5. Exit returns to the color select menu.

```
    RANDOM ACCESS
   ADJUSTMENT MODE

    PICTURE TUNING
      GEOMETRY
     CONVERGENCE
      FOCUSING
    [COLOR SELECT]

    Select with ↑ or ↓
      then <ENTER>
     <EXIT> to return
```
menu 1

```
      COLOR SELECT


          RED
         GREEN
          BLUE
      RED AND GREEN
     BLUE AND GREEN
      RED AND BLUE


    Select with ↑ or ↓
      then <ENTER>
     <EXIT> to return
```
menu 2
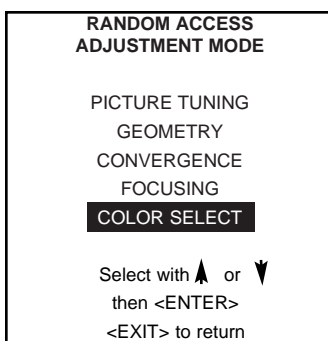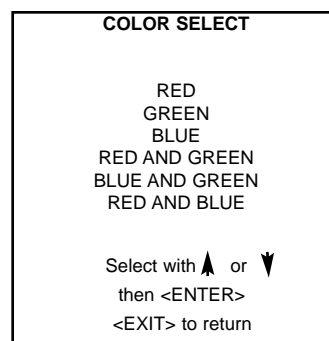
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SERVICE MODE _____

Service Mode

Start Up

1. Push the cursor key ↑ or ↓ to select to SERVICE (menu 1).
2. Press ENTER to select.
   The service menu will be displayed (menu 2). Some items in the Service mode are password protected (when the password function is active). Enter your password to continue. All other password protected items are now also available if you stay in the adjustment mode.
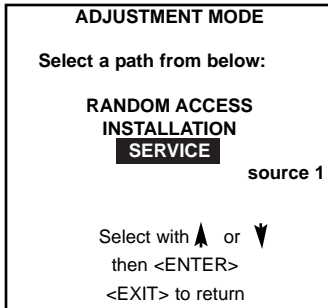
```
┌─────────────────────────────┐      ┌─────────────────────────────┐
│      ADJUSTMENT MODE        │      │        SERVICE MODE          │
│                             │      │                              │
│  Select a path from below:  │      │      PROJECTOR SET-UP        │
│                             │      │    MEMORY MANAGEMENT          │
│      RANDOM ACCESS          │      │     COMMON SETTINGS           │
│      INSTALLATION           │      │                              │
│       SERVICE               │      │      I2C DIAGNOSTICS          │
│              source 1       │      │   VOLTAGE DIAGNOSTICS         │
│                             │      │  PROJECTOR DIAGNOSTICS        │
│    Select with ↑  or  ↓     │      │    Select with ↑  or  ↓      │
│     then <ENTER>            │      │      then <ENTER>            │
│    <EXIT> to return         │      │     <EXIT> to return         │
└─────────────────────────────┘      └─────────────────────────────┘
```
menu 1   menu 2

Overview Flowchart

```
                                              ┌─────────────────────────────┐
                                              │ IDENTIFICATION              │
                                              ├─────────────────────────────┤
                                              │ TOTAL RUN TIME              │
                                              ├─────────────────────────────┤
                                              │ CHANGE PASSWORD             │
                                              ├─────────────────────────────┤
                                              │ CHANGE LANGUAGE             │
                           ┌───────────────┐  ├─────────────────────────────┤
                           │ PROJECTOR SET UP│ │ CHANGE PROJECTOR ADDRESS  │
                           └───────────────┘  ├─────────────────────────────┤
                                              │ CHANGE BAUD RATE            │
                                              ├─────────────────────────────┤
                                              │ PROJECTOR WARM UP           │
                                              ├─────────────────────────────┤
                                              │ POWER UP MODE               │
                                              ├─────────────────────────────┤
                                              │ COMMON ADDRESS              │
                                              └─────────────────────────────┘

  ┌──────────────┐                            ┌─────────────────────────────┐
  │ SERVICE MODE │                            │ COPY A BLOCK                │
  └──────────────┘                            ├─────────────────────────────┤
                                              │ DELETE A BLOCK              │
                           ┌────────────────┐ ├─────────────────────────────┤
                           │MEMORY MANAGEMENT│ │ DELETE ALL BLOCKS          │
                           └────────────────┘ ├─────────────────────────────┤
                                              │ SET TO MIDPOSITION          │
                                              └─────────────────────────────┘

                                              │ DYNAMIC ANTIGMATISM         │
                                              ├─────────────────────────────┤
                                              │ GAMMA CORRECTION            │
                           ┌────────────────┐ ├─────────────────────────────┤
                           │COMMON SETTINGS │  │ CRT RUN IN CYCLE           │
                           └────────────────┘ ├─────────────────────────────┤
                                              │ CRT DRIVE MODE              │
                           ┌────────────────┐ ├─────────────────────────────┤
                           │ I2C DIAGNOSTICS│  │ MEMORYBANKS: ON            │
                           └────────────────┘ ├─────────────────────────────┤
                                              │ FLYBACK TURNOVER POINT      │
                           ┌────────────────────┐├───────────────────────────┤
                           │VOLTAGE DIAGNOSTICS│ │ MENU POSITION: STANDARD   │
                           └────────────────────┘└───────────────────────────┘
                           ┌────────────────────┐
                           │PROJECTOR DIAGNOSTICS│
                           └────────────────────┘
```

Projector Setup

What can be done?
Within the projector set-up menu, the following items can be consultated or set to the desired setting:
- Identification
- Total run time
- Change password
- Change projector address
- Change baud rate
- Projector warm up
- Power up mode
- Common address

Start up the Projector Set-Up
To select Projector Set-Up:
1. Push the cursor key ↑ or ↓ to highlight Projector Set Up (menu 1).
2. Press **ENTER** to display the Projector set up menu (menu 2).

```
          SERVICE MODE

       PROJECTOR SET-UP
      MEMORY MANAGEMENT
       COMMON SETTINGS
        I2C DIAGNOSTICS
      VOLTAGE DIAGNOSTICS
     PROJECTOR DIAGNOSTICS


       Select with ↑ or ↓
         then <ENTER>
        <EXIT> to return
```
menu 1
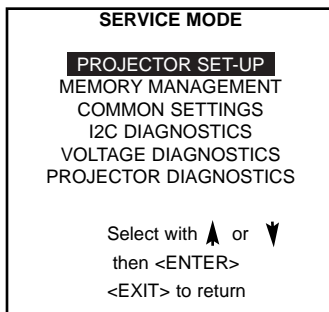
```
         PROJECTOR SET-UP

          IDENTIFICATION
            RUN TIME
        CHANGE PASSWORD
    CHANGE PROJECTOR ADDRESS
        CHANGE BAUD RATE
       PROJECTOR WARM UP
    POWER UP MODE: operating
      COMMON ADDRESS: 0

       Select with ↑ or ↓
         then <ENTER>
        <EXIT> to return
```
menu 2

Identification

What can be seen?
The 'Identification' screen gives information concerning:
- **Projector address.** To change the address of your projector, contact a qualified service technician.
- **Software version.**
- **Configuration.**
  - Possible installations:
  - * Front-ceiling
  - * Front-table
  - * Rear-ceiling
  - * Rear-table
- **Baud Rate:** transfer speed for communication with an external control system. The baud rate of the projector must be the same as the baud rate of the connected control system.
- **Text ON/OFF**
  Indicates in operational mode if the bar scale and number indicator will be displayed and if warnings and failures will be displayed.
  - ON : displayed
  - OFF : not displayed
  The status can be changed by pressing the 'TEXT' key once on the Remote.
- **Serial no.:** indicates the fabrication number of the projector. This number can be useful when calling for technical assistance.
- **Projector Level**: from 0 to 6. The higher the level the more software options installed. Contact your vendor for more information.
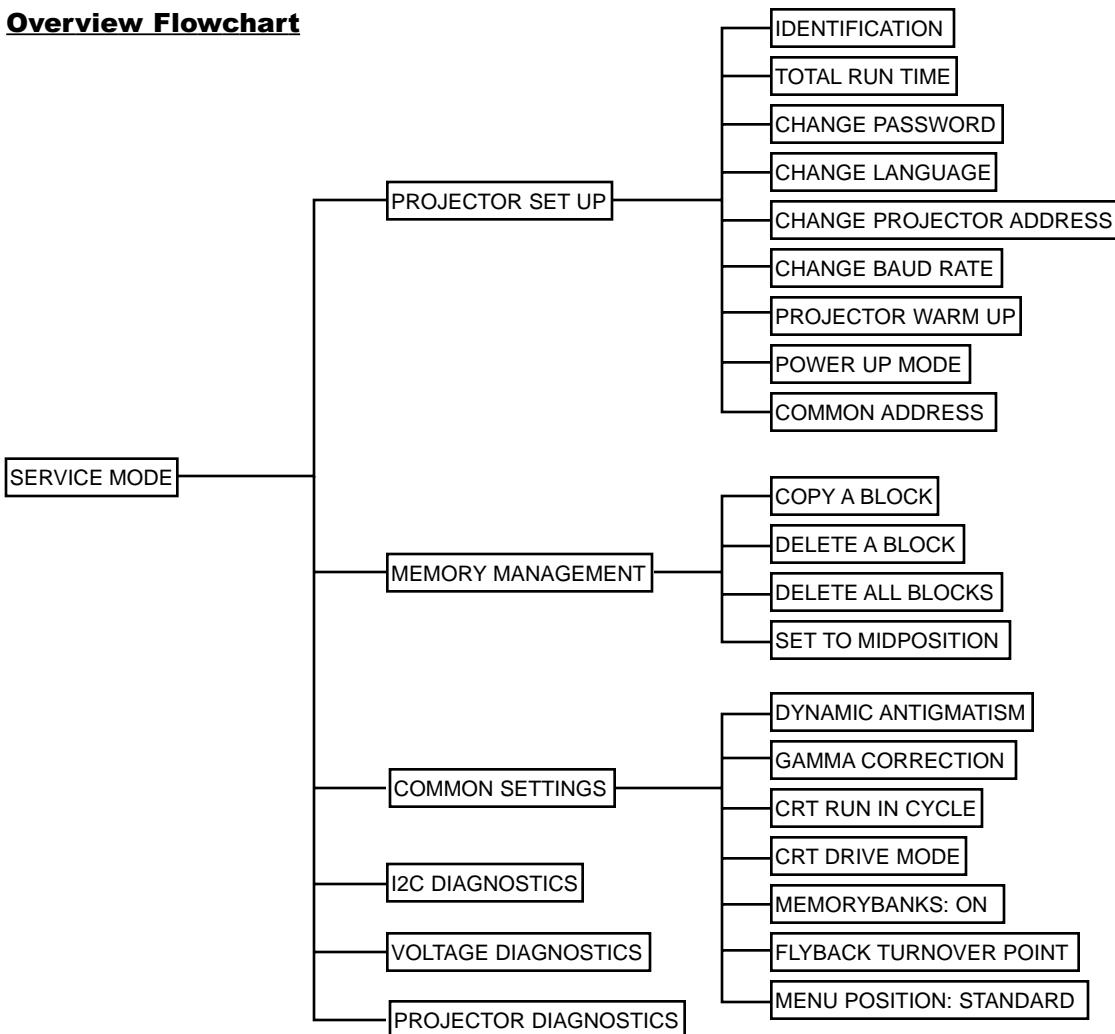
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How to start up?

To select Identification:
1. Push the cursor key ⬆ or ⬇ to highlight Identification (menu 1).
2. Press **ENTER** to select. The identification screen will be displayed (menu 2).

```
        PROJECTOR SET-UP

         IDENTIFICATION
            RUN TIME
        CHANGE PASSWORD
   CHANGE PROJECTOR ADDRESS
       CHANGE BAUD RATE
       PROJECTOR WARM UP
     POWER UP MODE: operating
      COMMON ADDRESS: 0

       Select with ⬆ or ⬇
          then <ENTER>
        <EXIT> to return
```
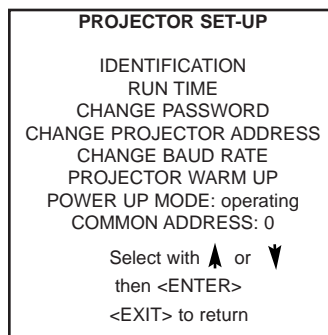
```
        RUNCO
        DTV-1200
   Proj. address: 001
   Soft. Version: 6.00
   Config.: Ceiling/Front
   Baud Rate PC: 9600
   Text: ON
   Serial No.: 103589552
   Projector level: 1
```

menu 1   menu 2

Run Time

What can be displayed?

The total sytem run time since the first start up can be displayed plus the run time of the separate CRT's since the last reset.

Run Time Note:

All projectors leave the factory after a burn-in period of approximately 100 hours.

How to start up?

To select the different Run Times:
1. Push the cursor key ⬆ or ⬇ to highlight 'Run Time (menu 1).
2. Press **ENTER** to display the run time menu (menu 2).
   The amount of time the projector has run since its first start up at the factory will be displayed as the system run time. The CRT run times will be displayed next to the respective colors.

```
        PROJECTOR SET-UP

          IDENTIFICATION
            RUN TIME
        CHANGE PASSWORD
   CHANGE PROJECTOR ADDRESS
       CHANGE BAUD RATE
       PROJECTOR WARM UP
     POWER UP MODE: operating
      COMMON ADDRESS: 0

       Select with ⬆ or ⬇
          then <ENTER>
        <EXIT> to return
```

```
           RUN TIME

     SYSTEM RUNTIME : 120 h

        CRT RUNTIME :
          RED : 20 h
         GREEN : 20 h
          BLUE : 50 h


       Select with ⬆ or ⬇
          then <ENTER>
        <EXIT> to return
```

menu 1   menu 2

How to reset the CRT run times?

1. Push the cursor key ⬆ or ⬇ to highlight the color of the CRT for which the Run Time has to be reseted (menu 1).
2. Press **ENTER** to reset the run time.
3. Press **EXIT** to return to the Projector Set up menu.

```
           RUN TIME

     SYSTEM RUNTIME : 120 h

        CRT RUNTIME :
          RED : 20 h
         GREEN : 20 h
          BLUE : 50 h


       Select with ⬆ or ⬇
          then <ENTER>
        <EXIT> to return
```

menu 2

Change Password

What can be done?

The password code (4 digits) can be changed to a new one.
This item is password protected. First the actual password should be entered before continuing.

Note:
Password function is only active if the jumper on the controller is in the 'ON' position.

How to select?

To select Change Password :
1. Push the cursor key ↑ or ↓ to highlight 'Change Password' (menu 1).
2. Press **ENTER** to display the password menu (menu 2).
If it is the first time you enter a password protected item, enter your password and press ENTER.
The current password is displayed. The new password must consist of 4 digits between 0 and 9.

How to enter a new password?

Perform the following:
1. Push the cursor key ← or → to select the digits to be changed (menu 2).
2. Press a numeric keys to enter the new digit.
3. Repeat for the other digits.
4. Press **ENTER** to save the new password.
   Before saving the new password, a confirmation screen will be displayed (menu 3).
5. When the displayed password is correct, press **ENTER** to save.
6. If not correct, press **EXIT** to cancel the saving.

```
        PROJECTOR SET-UP

           IDENTIFICATION
             RUN TIME
        [ CHANGE PASSWORD ]
     CHANGE PROJECTOR ADDRESS
         CHANGE BAUD RATE
         PROJECTOR WARM UP
     POWER UP MODE: operating
       COMMON ADDRESS: 0

        Select with ↑ or ↓
          then <ENTER>
          <EXIT> to return
```
menu 1

```
            PASSWORD

      Enter new password :

            0 0 0 0

     Use ← and → to select,
         and reprogram
       with numeric keys.
        <ENTER> to confirm
         <EXIT> to return
```
menu 2
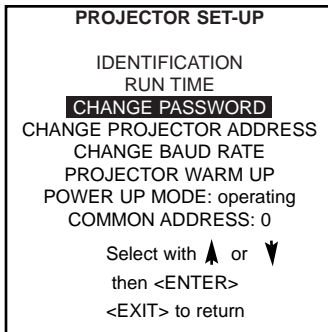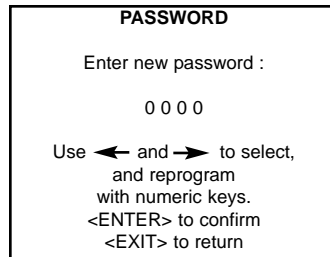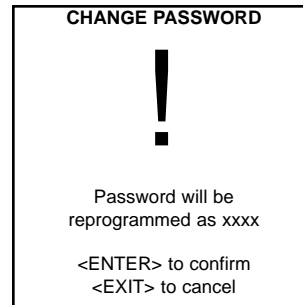
```
       CHANGE PASSWORD

              !
              ▪

         Password will be
      reprogrammed as xxxx

        <ENTER> to confirm
         <EXIT> to cancel
```
menu 3

Change Projector Address

What can be done?

Every projector requires an individual address between 0 and 255.

How to change the address?

To change the address, perform the following:

```
        PROJECTOR SET-UP

         IDENTIFICATION
           RUN TIME
        CHANGE PASSWORD
  CHANGE PROJECTOR ADDRESS
       CHANGE BAUD RATE
       PROJECTOR WARM UP
    POWER UP MODE: operating
     COMMON ADDRESS: 0

        Select with ▲ or ▼

           then <ENTER>

          <EXIT> to return
```
menu 1

```
       PROJECTOR ADDRESS

    Enter new projector address:

             0 0 0

      Use ◄─ and ─► to select,
           and reprogram
         with numeric keys.
      Highest address is 255

         <ENTER> to confirm
          <EXIT> to return
```
menu 2

1. Push the cursor key ▲ or ▼ to highlight 'Change Projector Address' (menu 1).
2. Press **ENTER** to select.
   The Change Projector Address menu (menu 2) will be displayed and the actual address will be filled in.
   The first digit is highlighted.
3. Push the cursor key ◄─ or ─► to select the digit to be changed.
4. Reprogram with the digit keys on the Remote.
5. Press **ENTER** to confirm.

Change Baud Rate

What can be set up?

The communication speed between projector and computer has 8 possible speeds.
The baud rate speed can be software set up.
The following baud rates are available: 38400, 19200, 9600, 4800, 2400, 1200.

How to set up?

To set up the baud rate:
1. Push the cursor key ▲ or ▼ to highlight 'Change Baud Rate' (menu 1).
2. Press **ENTER** to select. The actual baud rate will be highlighted (menu 2)
3. Push the cursor key ▲ or ▼ to select the desired baud rate.
4. Press **ENTER** to accept.

```
        PROJECTOR SET-UP

         IDENTIFICATION
           RUN TIME
        CHANGE PASSWORD
   CHANGE PROJECTOR ADDRESS
       CHANGE BAUD RATE
       PROJECTOR WARM UP
    POWER UP MODE: operating
      COMMON ADDRESS: 0

        Select with ▲ or ▼

           then <ENTER>

          <EXIT> to return
```
menu 1

```
           BAUD RATE

       Select new baud rate :

       38400      19200
       9600       4800
       2400       1200

       Select with arrow keys:

         <ENTER> to accept
          <EXIT> to return.
```
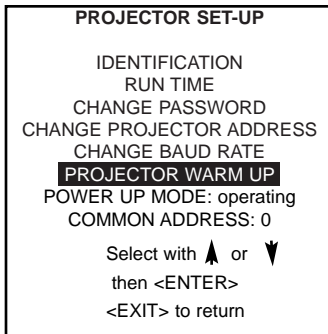menu 2

Projector Warm Up

What can be done?

When in the ON position (and the CRT run in cycle is OFF), the projector can start up with a warm up period. The warm up time can be set up by the customer as well as the frequency of the warm up source. During the start up a warm up menu will be displayed. This menu offers the option to skip the warm up period by pressing the **EXIT** key and offers the possibility to adjust the horizontal and vertical amplitude of this white image with the cursor keys. During this warm up period, a full white image is shifted on the CRT faceplate to avoid a burn in.

Every 30 seconds a text box will be displayed on another place on the screen with the remaining time to go. When **EXIT** is pressed during this warm up period, the warm up menu will be redisplayed with the remaining time indication. Press another time **EXIT** to interrupt the warm up cycle. When the warm up option is OFF, when switching on the projector, it starts immediately with the projection of the selected source.

How to select?

1. Push the cursor key ↑ or ↓ to highlight 'Projector Warm up' (menu 1).
2. Press **ENTER** to select. The projector warm up menu will be displayed (menu 2).

```
     PROJECTOR SET-UP

        IDENTIFICATION
          RUN TIME
       CHANGE PASSWORD
  CHANGE PROJECTOR ADDRESS
      CHANGE BAUD RATE
    PROJECTOR WARM UP
  POWER UP MODE: operating
   COMMON ADDRESS: 0

     Select with ↑ or ↓

       then <ENTER>
      <EXIT> to return
```
menu 1

```
     PROJECTOR WARM UP

       WARM UP  : ON
     FREQUENCY : 64 kHz
        TIME : 15 min

     A FULL WHITE PATTERN
    WILL BE GENERATED AT
          POWER UP
    AFTER THIS PROCEDURE
   THE PROJECTOR IS READY
   TO PERFORM IN OPTIMUM
         CONDITION

        with <ENTER>
       <EXIT> to return
```
menu 2

Warm Up On/Off

What can be done?

The warm up option can be toggled between ON and OFF.
When in the ON position, while starting up the projector, the warm up cycle will be executed.
When in the OFF position, the projector starts up with inmediate image projection.

How to turn on the Warm up mode?

1. Push the cursor key ↑ or ↓ to highlight 'Warm up' (menu 1).
2. Press **ENTER** to toggle between ON and OFF.
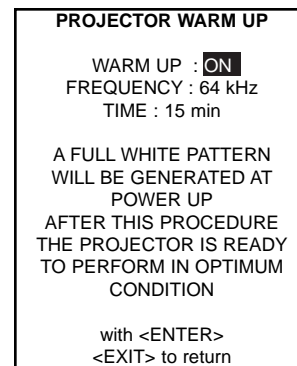
```
     PROJECTOR WARM UP

       WARM UP  : ON
     FREQUENCY : 64 kHz
        TIME : 15 min

     A FULL WHITE PATTERN
    WILL BE GENERATED AT
          POWER UP
    AFTER THIS PROCEDURE
   THE PROJECTOR IS READY
   TO PERFORM IN OPTIMUM
         CONDITION

        with <ENTER>
       <EXIT> to return
```
menu 1

Warm Up Frequency

What can be done?

The line frequency of the white pattern on which the warm up will be executed, can be entered by selecting out of the displayed list an available block. It is recommended that the Warm up frequency be the same as the input signal, if possible.

How to install a warm up frequency ?

1. Push the cursor key ↑ or ↓ to highlight 'Frequency' (menu 1).
2. Press **ENTER** to display the projector warm up frequency selection menu (menu 2).
3. Select a block with the cursor keys.
4. Press **ENTER** to copy the settings of the selected block to the warm up block.
5. Press **EXIT** to return.

```
         PROJECTOR WARM UP

         WARM UP  : ON
        FREQUENCY : 64 kHz
          TIME : 15 min

      A FULL WHITE PATTERN
      WILL BE GENERATED AT
           POWER UP
      AFTER THIS PROCEDURE
     THE PROJECTOR IS READY
     TO PERFORM IN OPTIMUM
           CONDITION

         with <ENTER>
        <EXIT> to return
```
menu 1

```
                  PROJECTOR WARM UP

Nr.     Src     Fh      Fv      inp       conf
1       1       15.6    50      video     FC
2       3       31.2    60      RGB3S     RT
3       -       15.6    50      intern    FC
4       2       31.5    50      RGB3S     FC
5       -       33.7    60      intern    FC
6
                                Active block nr. 1

      Select block to copy data from with  ↑  or  ↓
      <ENTER> to copy settings to warm up block.
                 <EXIT> to return.
```
menu 2

Projector Warm Up Time

What can be done?

The warm up time can be programmed with the cursor keys.

How to program the warm up time?

1. Push the cursor key ↑ or ↓ to highlight 'Time' (menu 1).
2. Press **ENTER** to display the projector warm up time menu (menu 2).
3. Use the cursor keys to select the first digit and reprogram with the numeric keys.
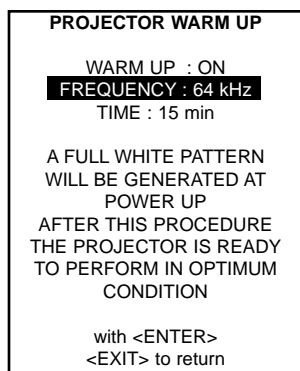   Repeat for the other digits.
   The projector warm up time is given in minutes.

```
       PROJECTOR WARM UP

       WARM UP  : ON
      FREQUENCY : 64 kHz
        TIME : 15 min

    A FULL WHITE PATTERN
    WILL BE GENERATED AT
         POWER UP
    AFTER THIS PROCEDURE
   THE PROJECTOR IS READY
   TO PERFORM IN OPTIMUM
         CONDITION

       with <ENTER>
      <EXIT> to return
```
menu 1
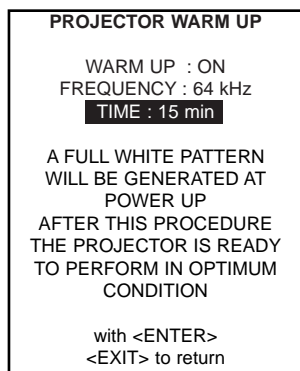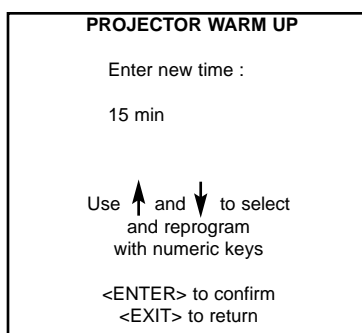
```
         PROJECTOR WARM UP

         Enter new time :

         15 min

     Use  ↑  and  ↓  to select
          and reprogram
        with numeric keys

      <ENTER> to confirm
       <EXIT> to return
```
menu 2

Power Up Mode

What can be done?

When pressing the power switch, the projector can start up in 'operating mode' or in 'stand-by mode'.

Operating mode: the projector start up and displays image.
Stand-by mode: the projector start up in stand-by and waits until the stand-by button or a digit key is pressed.

How to change the mode?

To change the Power up mode:
1. Push the cursor key ↑ or ↓ to highlight Power Up (menu 1).
2. Press **ENTER** to toggle between 'Operating' and 'Standby'.
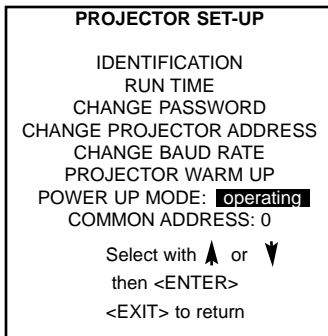
```
        PROJECTOR SET-UP

         IDENTIFICATION
           RUN TIME
        CHANGE PASSWORD
   CHANGE PROJECTOR ADDRESS
       CHANGE BAUD RATE
       PROJECTOR WARM UP
   POWER UP MODE:  operating
     COMMON ADDRESS: 0

       Select with ↑ or ↓
         then <ENTER>
        <EXIT> to return
```
menu 1

Note: Runco recommends that this be left in 'Standby' for long-term reliability.

Common Address

What can be done?

Every projector listens to a common address. This common address can be set to '0' or '1'. When a Remote is programmed with a common address, every projector with that same common address will follow up the commands given by that Remote.

Why 2 different common address?

The reason to have the choice to select between common addresses is, to avoid controlling of other IR controlled units, e.g. a TV set with standard common address 0.

How to change the common address?

1. Push the cursor key ↑ or ↓ to highlight Common Address (menu 1).
2. Press **ENTER** to toggle between '0' and '1'.

```
        PROJECTOR SET-UP

         IDENTIFICATION
           RUN TIME
        CHANGE PASSWORD
   CHANGE PROJECTOR ADDRESS
       CHANGE BAUD RATE
       PROJECTOR WARM UP
   POWER UP MODE: operating
     COMMON ADDRESS: 0

       Select with ↑ or ↓
         then <ENTER>
        <EXIT> to return
```
menu 1
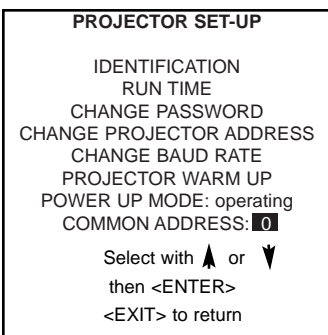
Memory Management

What can be done?
Within the memory management menu, the following items can be consultated or executed :
- copy a block
- delete a block
- delete all blocks
- set to midposition

How to select?
To select Memory Management:
1. Push the cursor key ↑ or ↓ to highlight Memory Management (menu 1).
2. Press ENTER to select. The memory management menu will be displayed (menu 2).

```
            SERVICE MODE

        PROJECTOR SET-UP
        MEMORY MANAGEMENT
        COMMON SETTINGS
        I2C DIAGNOSTICS




          Select with ▲ or ▼
            then <ENTER>
          <EXIT> to return
```
menu 1

```
        MEMORY MANAGEMENT

           COPY A BLOCK
          DELETE A BLOCK
         DELETE ALL BLOCKS
         SET TO MIDPOSITION




          Select with ▲ or ▼
            then <ENTER>
          <EXIT> to return
```
menu 2

Copy a Block

What can be done?
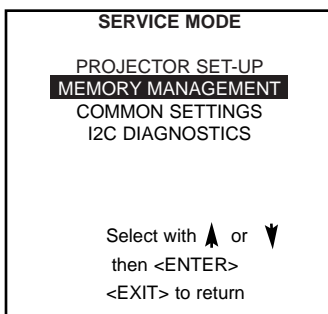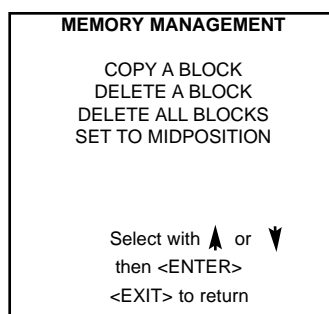The copy a block function copies the settings of a selected block into the active block.

How to copy?
To copy a block :
1. Push the cursor key ↑ or ↓ o highlight 'Copy a Block' (menu 1).
2. Press **ENTER** to select.
   The copy menu will be displayed (menu 2).
   To copy the settings of a closed block to the block you are working on (active block),
3. Push the cursor key ↑ or ↓ to select a block.
4. Press **ENTER** to copy the selected block.
   All current settings will be overwritten with the settings of the block which is copied.
   A confirmation screen will be displayed (menu 3).
5. **ENTER** to confirm. **EXIT** cancels the copy procedure and returns without copying the block.

```
        MEMORY MANAGEMENT

           COPY A BLOCK
          DELETE A BLOCK
         DELETE ALL BLOCKS
         SET TO MIDPOSITION




          Select with ▲ or ▼
            then <ENTER>
          <EXIT> to return
```
menu 1

Nr.	Src	Fh	Fv	inp	conf
**COPY MODE**					
1	1	15.6	50	video	FC
2	3	31.2	60	RGB3S	RT
3	-	15.6	50	intern	FC
4	2	31.5	50	RGB3S	FC
5	-	33.7	60	intern	FC
6					
7					
8					

Active block nr. 1

Select with ▲ or ▼
<ENTER> to copy
<EXIT> to return.

menu 2
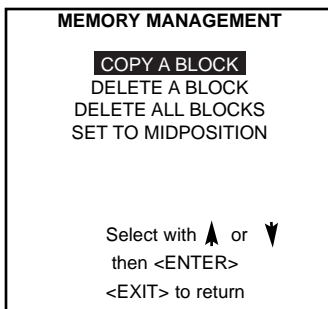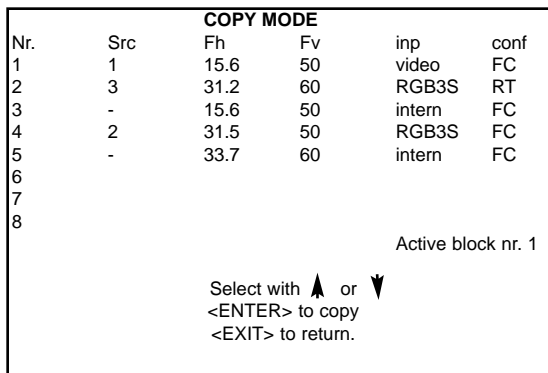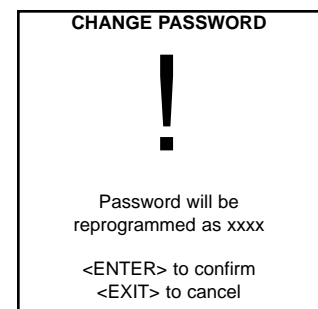
```
        CHANGE PASSWORD

              !

          Password will be
        reprogrammed as xxxx

         <ENTER> to confirm
          <EXIT> to cancel
```
menu 3

Deletion of Blocks

What can be done?

The delete function is used to clear all data (settings) from an adjustment block.
A delete can be given:
- block by block or
- for all blocks.

This item is password protected.

Deleting Block by Block

What can be done?
The 'delete a block' function deletes the settings of a selected block.

How to delete a Block?
1. Push the cursor key ↑ or ↓ to highlight Delete a Block (menu 1).
2. Press **ENTER** to display the delete mode (menu 2).
3. Push the cursor key ↑ or ↓ to select the desired adjustment block.
4. Press **ENTER** to delete the selected adjustment block.
   A confirmation menu will be displayed (menu 3).
5. Press **ENTER** to confirm.
   Press **EXIT** to cancel the deletion procedure

```
         MEMORY MANAGEMENT

            COPY A BLOCK
            DELETE A BLOCK
            DELETE ALL BLOCKS
            SET TO MIDPOSITION



         Select with ↑ or ↓
           then <ENTER>
          <EXIT> to return
```
menu 1

```
                          DELETE MODE

Nr.     Src      Fh       Fv       inp       conf
1       1        15.6     50       video     FC
2       3        31.2     60       RGB3S     RT
3       -        15.6     50       intern    FC
4       2        31.5     50       RGB3S     FC
5       -        33.7     60       intern    FC
6
7
8
                                    Active block nr. 1

              Select with ↑ or ↓
              <ENTER> to copy
              <EXIT> to return.
```
menu 2
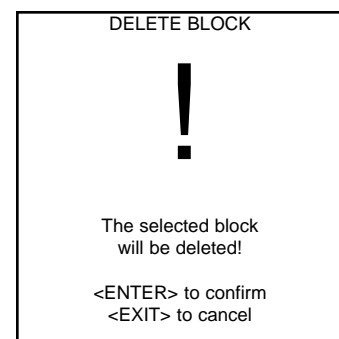
```
            DELETE BLOCK


               !


           The selected block
            will be deleted!

           <ENTER> to confirm
           <EXIT> to cancel
```
menu 3

Deletion of All Blocks

What can be done?

All blocks (all settings) can be deleted at the same time.

How to delete all blocks?

1. Push the cursor key ↑ or ↓ to highlight Delete all Blocks (menu 1).
2. Press **ENTER** to select.
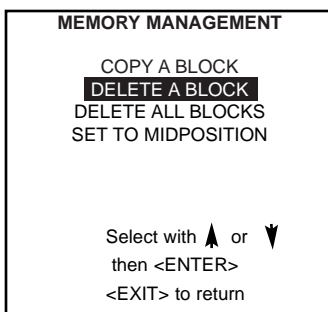   A confirmation screen will be displayed (menu 2).
3. Press **ENTER** to confirm
   Press **EXIT** to return without deleting any block.
   **Once ENTER is pressed, all block headers and adjustment settings are permanently removed
   and cannot be restored.**
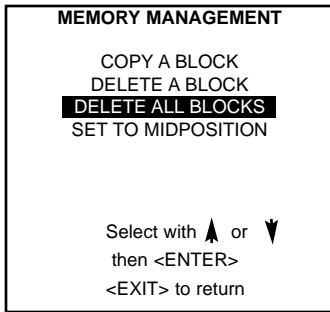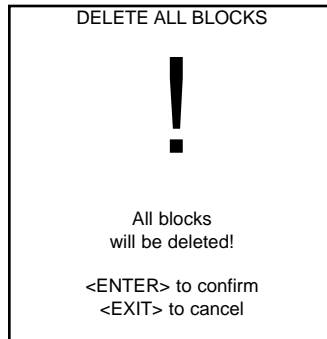
```
  MEMORY MANAGEMENT              DELETE ALL BLOCKS

    COPY A BLOCK
    DELETE A BLOCK
 ▐DELETE ALL BLOCKS▌                  !

   SET TO MIDPOSITION



                                    All blocks
   Select with ▲ or ▼             will be deleted!
     then <ENTER>
    <EXIT> to return           <ENTER> to confirm
                                <EXIT> to cancel

   menu 1
                                   menu 2
```

Set to Midposition

What can be done?

All adjustment settings (geometry and convergence) can be set to mid position.
Item is password protected.

How to Start Up?

1. Push the cursor key ↑ or ↓ to highlight 'Set to Midposition' (menu 1).
2. Press **ENTER** to display the set to midposition menu (menu 2).

```
  MEMORY MANAGEMENT            SET TO MIDPOSITION

    COPY A BLOCK             R&B CONVERGENCE MID
    DELETE A BLOCK          GREEN CONVERGENCE MID
   DELETE ALL BLOCKS         FOCUS TO MIDPOSITION
 ▐ SET TO MIDPOSITION▌        E-W TO MIDPOSITION
                             N-S TO MIDPOSITION
                            DIG VERT LINEARITY MID
                            DIG HOR LINEARITY MID
   Select with ▲ or ▼      ASTIGMATISM MIDPOSITION
     then <ENTER>           ALL SETTINGS TO MIDPOS
    <EXIT> to return
                             Select with ▲ or ▼
   menu 1                      then <ENTER>
                             <EXIT> to return.

                                menu 2
```
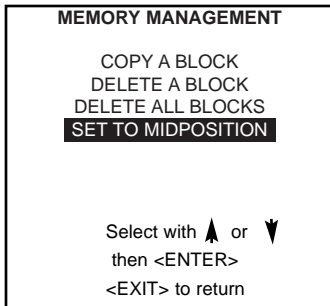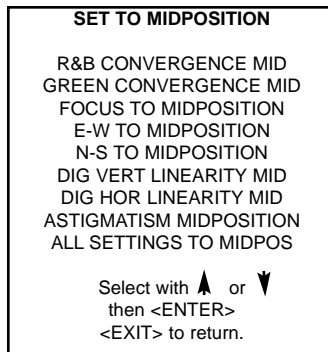
R & B Covergence Mid
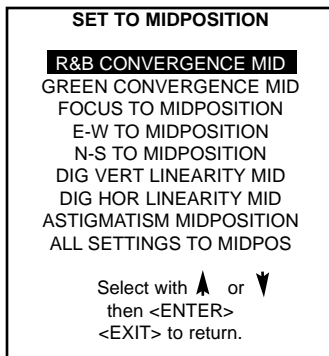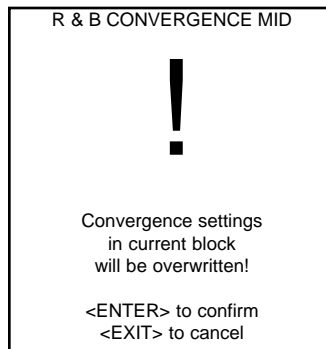
What can be done?

All convergence settings for red and blue are set to midposition.
Item is password protected

How to set convergence to midposition:

1. Push the cursor key ↑ or ↓ to highlight 'R & B Convergence Mid' (menu 1).
2. Press **ENTER** to select. A confirmation screen will be displayed first (menu 2).
3. Press **ENTER** to confirm.

```
┌─────────────────────────────┐        ┌─────────────────────────────┐
│    SET TO MIDPOSITION       │        │    R & B CONVERGENCE MID    │
│                             │        │                             │
│  ▮R&B CONVERGENCE MID▮      │        │             █               │
│   GREEN CONVERGENCE MID     │        │             █               │
│   FOCUS TO MIDPOSITION      │        │             █               │
│   E-W TO MIDPOSITION        │        │             █               │
│   N-S TO MIDPOSITION        │        │             ▄               │
│   DIG VERT LINEARITY MID    │        │                             │
│   DIG HOR LINEARITY MID     │        │    Convergence settings     │
│   ASTIGMATISM MIDPOSITION   │        │      in current block       │
│   ALL SETTINGS TO MIDPOS    │        │    will be overwritten!     │
│                             │        │                             │
│    Select with ▲  or ▼      │        │    <ENTER> to confirm       │
│    then <ENTER>             │        │    <EXIT> to cancel         │
│    <EXIT> to return.        │        │                             │
└─────────────────────────────┘ menu 1 └─────────────────────────────┘ menu 2
```
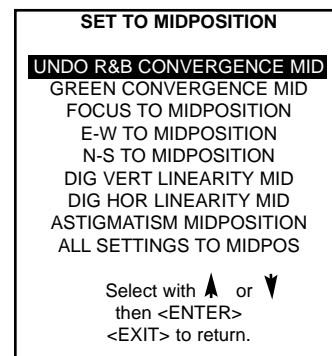
Undo R & B Convergence Mid

What can be done?

When "R & B convergence mid" is selected, all convergence settings are
set to their midposition. With the undo, it is possible to return to the
previous settings as long as the projector is playing on the same source
(= same adjustment block).
'Undo R & B convergence mid' is displayed in the Set Midposition menu
instead of 'R & B convergence mid' when this latter is pressed.

```
┌─────────────────────────────┐
│    SET TO MIDPOSITION       │
│                             │
│ ▮UNDO R&B CONVERGENCE MID▮  │
│   GREEN CONVERGENCE MID     │
│   FOCUS TO MIDPOSITION      │
│   E-W TO MIDPOSITION        │
│   N-S TO MIDPOSITION        │
│   DIG VERT LINEARITY MID    │
│   DIG HOR LINEARITY MID     │
│   ASTIGMATISM MIDPOSITION   │
│   ALL SETTINGS TO MIDPOS    │
│                             │
│    Select with ▲  or ▼      │
│    then <ENTER>             │
│    <EXIT> to return.        │
└─────────────────────────────┘ menu 1
```

How to Undo?

1. Push the cursor key ▲ or ▼ to highlight 'Undo R & B
   Convergence Mid' (menu 1).
2. Press **ENTER** execute the undo function.
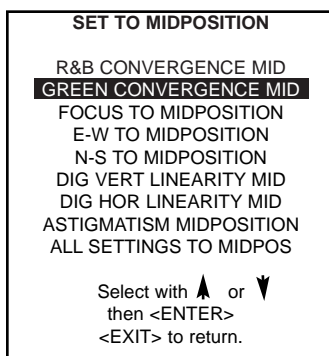
Green Convergence Mid

What can be done?

The green convergence settings can be set to midposition.
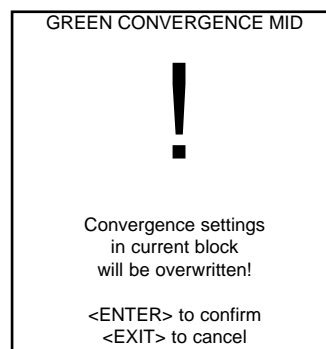Only available when the projector is equipped with green convergence adjustments.

How to set Green settings to midposition?

1. Push the cursor key ▲ or ▼ to highlight 'Green Convergence Mid' (menu 1).
2. Press **ENTER** to select. A confirmation screen will be displayed first (menu 2).
3. Press **ENTER** to confirm.
   Press **EXIT** to cancel the procedure to set the green convergence settings to their midposition.

```
┌─────────────────────────────┐        ┌─────────────────────────────┐
│    SET TO MIDPOSITION       │        │    GREEN CONVERGENCE MID    │
│                             │        │                             │
│   R&B CONVERGENCE MID       │        │             █               │
│  ▮GREEN CONVERGENCE MID▮    │        │             █               │
│   FOCUS TO MIDPOSITION      │        │             █               │
│   E-W TO MIDPOSITION        │        │             █               │
│   N-S TO MIDPOSITION        │        │             ▄               │
│   DIG VERT LINEARITY MID    │        │                             │
│   DIG HOR LINEARITY MID     │        │    Convergence settings     │
│   ASTIGMATISM MIDPOSITION   │        │      in current block       │
│   ALL SETTINGS TO MIDPOS    │        │    will be overwritten!     │
│                             │        │                             │
│    Select with ▲  or ▼      │        │    <ENTER> to confirm       │
│    then <ENTER>             │        │    <EXIT> to cancel          │
│    <EXIT> to return.        │        │                             │
└─────────────────────────────┘ menu 1 └─────────────────────────────┘ menu 2
```
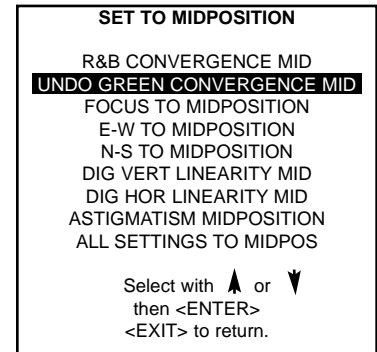
Undo Green Convergence Mid

What can be done?
'Undo Green convergence mid' is displayed in the Set Midposition menu instead of 'Green convergence mid' when the latter is pressed. Only available when the projector is equipped with green convergence adjustmentes.

How to undo?
1. Push the cursor key ↑ or ↓ to highlight 'Undo Green Convergence Mid' (menu 1).
2. Press **ENTER** undo.

```
        SET TO MIDPOSITION

      R&B CONVERGENCE MID
   UNDO GREEN CONVERGENCE MID
      FOCUS TO MIDPOSITION
      E-W TO MIDPOSITION
      N-S TO MIDPOSITION
      DIG VERT LINEARITY MID
      DIG HOR LINEARITY MID
      ASTIGMATISM MIDPOSITION
      ALL SETTINGS TO MIDPOS

       Select with ↑  or  ↓
          then <ENTER>
         <EXIT> to return.
```
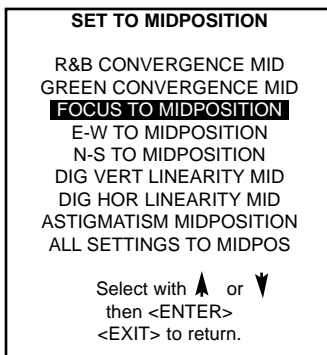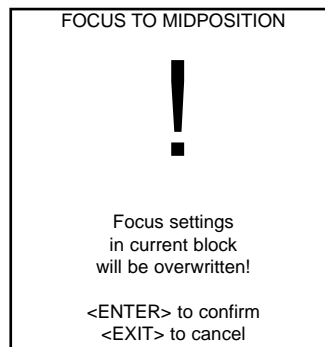menu 1

Focus to Midposition

What can be done?
The focus settings can be set to midposition.

How to set the Focus settings to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Focus to Midposition' (menu 1).
2. Press **ENTER** to select. A confirmation screen will be displayed first (menu 2).
3. Press **ENTER** to confirm. Press **EXIT** to cancel the procedure to set the focus settings to their midposition.

```
      SET TO MIDPOSITION

    R&B CONVERGENCE MID
    GREEN CONVERGENCE MID
    FOCUS TO MIDPOSITION
    E-W TO MIDPOSITION
    N-S TO MIDPOSITION
    DIG VERT LINEARITY MID
    DIG HOR LINEARITY MID
    ASTIGMATISM MIDPOSITION
    ALL SETTINGS TO MIDPOS

     Select with ↑  or  ↓
        then <ENTER>
       <EXIT> to return.
```
menu 1

```
     FOCUS TO MIDPOSITION


            !


       Focus settings
      in current block
     will be overwritten!

     <ENTER> to confirm
      <EXIT> to cancel
```
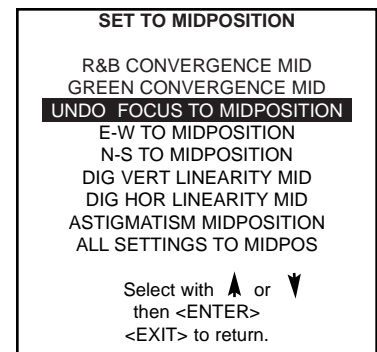menu 2

Undo Focus to Midposition

What can be done?
'Undo Focus to Midposition' is displayed in the Set Midposition menu instead of 'Focus to midposition' when the latter is pressed. As long the projector is running on the same source (= same adjustment block), undo the focus to midposition is possible.

How to undo the Focus to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Undo Focus to Midposition' (menu 1).
2. Press **ENTER** undo.

```
        SET TO MIDPOSITION

      R&B CONVERGENCE MID
      GREEN CONVERGENCE MID
    UNDO  FOCUS TO MIDPOSITION
      E-W TO MIDPOSITION
      N-S TO MIDPOSITION
      DIG VERT LINEARITY MID
      DIG HOR LINEARITY MID
      ASTIGMATISM MIDPOSITION
      ALL SETTINGS TO MIDPOS

       Select with ↑  or  ↓
          then <ENTER>
         <EXIT> to return.
```
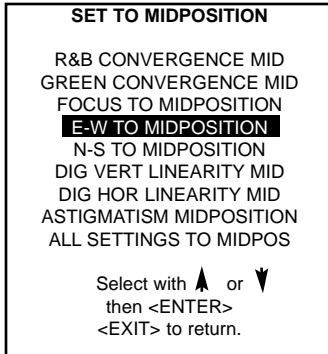menu 1

East-West to Midposition

What can be done?
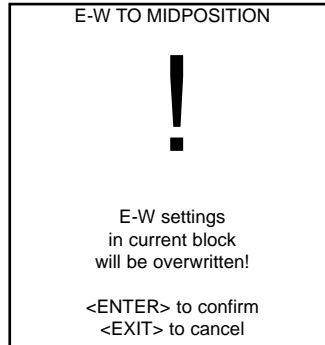The east-west settings can be set to midposition.

How to set the E-W settings to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'E-W to midposition' (menu 1).
2. Press **ENTER** to select. A confirmation screen will be displayed first (menu 2).
3. Press **ENTER** to confirm. Press **EXIT** to cancel the procedure to set the E-W settings to their midposition.

```
        SET TO MIDPOSITION

     R&B CONVERGENCE MID
     GREEN CONVERGENCE MID
      FOCUS TO MIDPOSITION
       E-W TO MIDPOSITION
       N-S TO MIDPOSITION
      DIG VERT LINEARITY MID
      DIG HOR LINEARITY MID
    ASTIGMATISM MIDPOSITION
     ALL SETTINGS TO MIDPOS

       Select with ↑  or  ↓
           then <ENTER>
         <EXIT> to return.
```
menu 1

```
        E-W TO MIDPOSITION



              !



           E-W settings
         in current block
       will be overwritten!

        <ENTER> to confirm
         <EXIT> to cancel
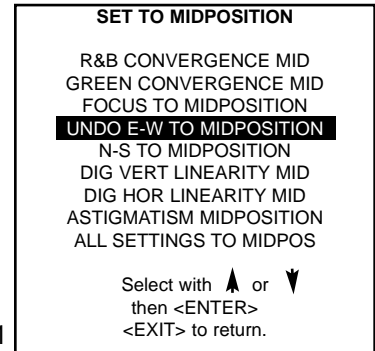```
menu 2

## Undo East-West to Midposition

### What can be done?
'Undo East-West to midposition' is displayed in the Set Midposition menu instead of 'E-W to midposition' when this latter is pressed. The settings for the E-W can be returned to previous installed settings as long the projector is playing on the same source ( = same adjustment block).

```
        SET TO MIDPOSITION

     R&B CONVERGENCE MID
     GREEN CONVERGENCE MID
      FOCUS TO MIDPOSITION
     UNDO E-W TO MIDPOSITION
       N-S TO MIDPOSITION
      DIG VERT LINEARITY MID
      DIG HOR LINEARITY MID
    ASTIGMATISM MIDPOSITION
     ALL SETTINGS TO MIDPOS

       Select with ↑ or ↓
           then <ENTER>
         <EXIT> to return.
```
menu 1

### How to Undo the E-W to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Undo E-W to midposition' (menu 1).
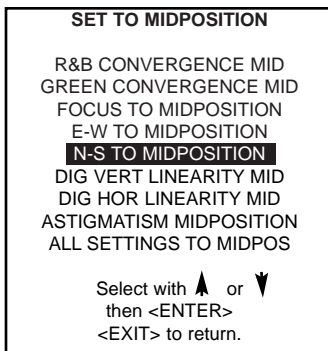2. Press **ENTER** undo.

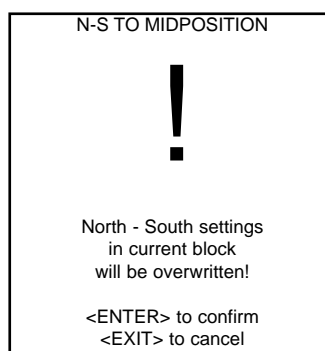## North-South Settings to Midposition

### What can be done?
The north-south settings can be set to midposition.

### How to set the N-S settings to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'N-S to midposition' (menu 1).
2. Press **ENTER** to select. A confirmation screen will be displayed first (menu 2).
3. Press **ENTER** to confirm. Press **EXIT** to cancel the procedure to set the N-S settings to their midposition.

```
        SET TO MIDPOSITION

     R&B CONVERGENCE MID
     GREEN CONVERGENCE MID
      FOCUS TO MIDPOSITION
       E-W TO MIDPOSITION
       N-S TO MIDPOSITION
      DIG VERT LINEARITY MID
      DIG HOR LINEARITY MID
    ASTIGMATISM MIDPOSITION
     ALL SETTINGS TO MIDPOS

       Select with ↑ or ↓
           then <ENTER>
         <EXIT> to return.
```
menu 1

```
        N-S TO MIDPOSITION

              !

        North - South settings
          in current block
        will be overwritten!

        <ENTER> to confirm
         <EXIT> to cancel
```
menu 2

## Undo North-South Settings to Midposition

### What can be done?
'Undo N-S to midposition' is displayed in the Set Midposition menu instead of 'N-S to midposition' when the latter is pressed. The settings for the N-S can be returned to previous installed settings as long the projector is playing on the same source ( = same adjustment block).

### How to Undo the N-S to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Undo N-S to midposition' (menu 1).
2. Press **ENTER** undo.

```
      SET TO MIDPOSITION

     R&B CONVERGENCE MID
    GREEN CONVERGENCE MID
     FOCUS TO MIDPOSITION
       E-W TO MIDPOSITION
   UNDO N-S TO MIDPOSITION
     DIG VERT LINEARITY MID
     DIG HOR LINEARITY MID
   ASTIGMATISM MIDPOSITION
    ALL SETTINGS TO MIDPOS

      Select with ↑ or ↓
         then <ENTER>
       <EXIT> to return.
```
menu 1

## Digital Vertical Linearity to Midposition

### What can be done?
The digital vertical linearity settings for the different areas can be set to their midposition.

### How to set the Digital Vertical Linearity to Midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Dig Vert Linearity mid' (menu 1).
2. Press **ENTER** to select. A confirmation screen will be displayed first (menu 2).
3. Press **ENTER** to confirm. Press **EXIT** to cancel the procedure to set the Digital Vertical Linearity to their mid position.

```
      SET TO MIDPOSITION

     R&B CONVERGENCE MID
    GREEN CONVERGENCE MID
     FOCUS TO MIDPOSITION
       E-W TO MIDPOSITION
       N-S TO MIDPOSITION
    DIG VERT LINEARITY MID
     DIG HOR LINEARITY MID
   ASTIGMATISM MIDPOSITION
    ALL SETTINGS TO MIDPOS

      Select with ↑ or ↓
         then <ENTER>
       <EXIT> to return.
```
menu 1

```
     DIG VERT LINEARITY
       TO MIDPOSITION

            !

    Dig Vert Linearity settings
        in current block
       will be overwritten!

     <ENTER> to confirm
      <EXIT> to cancel
```
menu 2

## Undo Digital Vertical Linearity to Midposition

### What can be done?
'Undo digital vertical linearity to midposition' is displayed in the Set Midposition menu instead of 'Dig Vert Linearity to midposition' when this latter is pressed. The settings for the dig vert linearity can be returned to previous installed settings as long the projector is playing on the same source ( = same adjustment block).

### How to undo the digital vertical linearity to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Undo Dig Vert Linearity to midposition' (menu 1).
2. Press **ENTER** undo.

```
      SET TO MIDPOSITION

     R&B CONVERGENCE MID
    GREEN CONVERGENCE MID
     FOCUS TO MIDPOSITION
       E-W TO MIDPOSITION
       N-S TO MIDPOSITION
  UNDO DIG VERT LINEARITY MID
     DIG HOR LINEARITY MID
   ASTIGMATISM MIDPOSITION
    ALL SETTINGS TO MIDPOS

      Select with ↑ or ↓
         then <ENTER>
       <EXIT> to return.
```
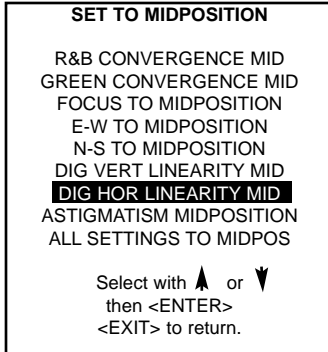menu 1

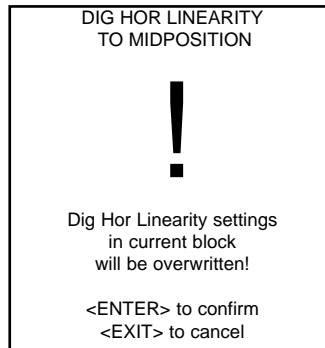## Digital Horizontal Linearity to Midposition

### What can be done?
The digital horizontal linearity settings for the different areas can be set to their midposition.

### How to set the Digital Horizontal Linearity to Midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Dig Hor Linearity mid' (menu 1).
2. Press **ENTER** to select. A confirmation screen will be displayed first (menu 2).
3. Press **ENTER** to confirm. Press **EXIT** to cancel the procedure to set the Digital horizontal linearity to their midposition.

```
        SET TO MIDPOSITION

     R&B CONVERGENCE MID
     GREEN CONVERGENCE MID
     FOCUS TO MIDPOSITION
        E-W TO MIDPOSITION
        N-S TO MIDPOSITION
     DIG VERT LINEARITY MID
     DIG HOR LINEARITY MID
     ASTIGMATISM MIDPOSITION
     ALL SETTINGS TO MIDPOS

        Select with ↑ or ↓
           then <ENTER>
        <EXIT> to return.
```
menu 1

```
        DIG HOR LINEARITY
          TO MIDPOSITION

              !

       Dig Hor Linearity settings
           in current block
          will be overwritten!

          <ENTER> to confirm
          <EXIT> to cancel
```
menu 2

## Undo Digital Horizontal Linearity to Midposition
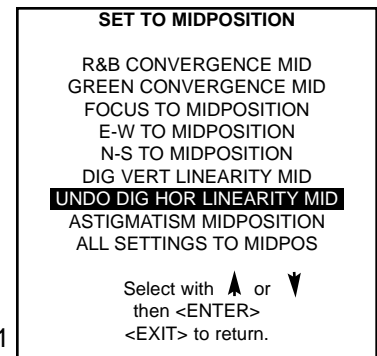
### What can be done?
'Undo digital horizontal linearity to midposition' is displayed in the Set Midposition menu instead of 'Dig Hor Linearity to midposition' when the latter is pressed. The settings for the dig hor linearity can be returned to previous installed settings as long the projector is playing on the same source ( = same adjustment block).

```
        SET TO MIDPOSITION

     R&B CONVERGENCE MID
     GREEN CONVERGENCE MID
     FOCUS TO MIDPOSITION
        E-W TO MIDPOSITION
        N-S TO MIDPOSITION
     DIG VERT LINEARITY MID
     UNDO DIG HOR LINEARITY MID
     ASTIGMATISM MIDPOSITION
     ALL SETTINGS TO MIDPOS

        Select with ↑  or  ↓
           then <ENTER>
        <EXIT> to return.
```

How to undo the digital horizontal linearity to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Undo Dig Vert Linearity to midposition' (menu 1).
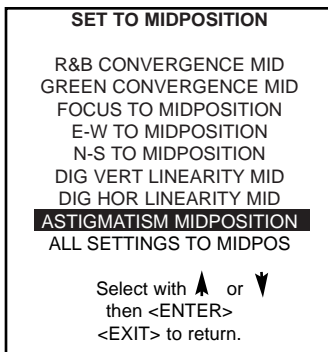2. Press **ENTER** undo.

menu 1

Astigmatism to Midposition
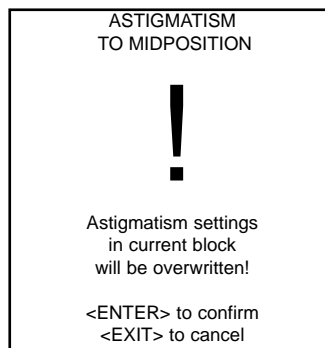
What can be done?
The astigmatism settings for the different areas can be set to their midposition.

How to set the Astigmatism to Midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Astigmatism' (menu 1).
2. Press **ENTER** to select. A confirmation screen will be displayed first (menu 2).
3. Press **ENTER** to confirm. Press **EXIT** to cancel the procedure to set the Astigmatism to their midposition.

```
        SET TO MIDPOSITION

     R&B CONVERGENCE MID
     GREEN CONVERGENCE MID
     FOCUS TO MIDPOSITION
        E-W TO MIDPOSITION
        N-S TO MIDPOSITION
     DIG VERT LINEARITY MID
     DIG HOR LINEARITY MID
     ASTIGMATISM MIDPOSITION
     ALL SETTINGS TO MIDPOS

        Select with ↑  or  ↓
           then <ENTER>
        <EXIT> to return.
```
menu 1

```
          ASTIGMATISM
          TO MIDPOSITION


              !


        Astigmatism settings
           in current block
          will be overwritten!

          <ENTER> to confirm
          <EXIT> to cancel
```
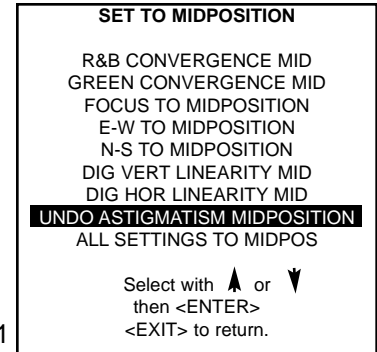menu 2

Undo Astigmatism to Midposition

What can be done?
'Undo Astigmatism midposition' is displayed in the Set Midposition menu instead of 'Astigmatism midposition' when the latter is pressed. The settings for the astigmatism can be returned to previous installed settings as long the projector is playing on the same source (= same adjustment block).

How to undo the Astigmatism settings to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'Undo Astigmatism Midposition' (menu 1).
2. Press **ENTER** undo.

```
     SET TO MIDPOSITION

   R&B CONVERGENCE MID
   GREEN CONVERGENCE MID
   FOCUS TO MIDPOSITION
   E-W TO MIDPOSITION
   N-S TO MIDPOSITION
   DIG VERT LINEARITY MID
   DIG HOR LINEARITY MID
   UNDO ASTIGMATISM MIDPOSITION
   ALL SETTINGS TO MIDPOS

   Select with ↑ or ↓
        then <ENTER>
      <EXIT> to return.
```
menu 1

All Settings to Midposition

What can be done?
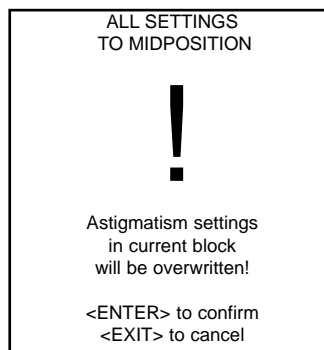All adjustment settings can be set to midposition.

How to set to midposition?
1. Push the cursor key ↑ or ↓ to highlight 'All Settings to Midposition' (menu 1).
2. Press **ENTER** to select. A confirmation menu will be displayed first (menu 2).
3. Press **ENTER** to confirm. Press **EXIT** to cancel the operation 'set all settings to their midposition'.

```
     SET TO MIDPOSITION

   R&B CONVERGENCE MID
   GREEN CONVERGENCE MID
   FOCUS TO MIDPOSITION
   E-W TO MIDPOSITION
   N-S TO MIDPOSITION
   DIG VERT LINEARITY MID
   DIG HOR LINEARITY MID
   ASTIGMATISM MIDPOSITION
   ALL SETTINGS TO MIDPOS

   Select with ↑ or ↓
        then <ENTER>
      <EXIT> to return.
```
menu 1
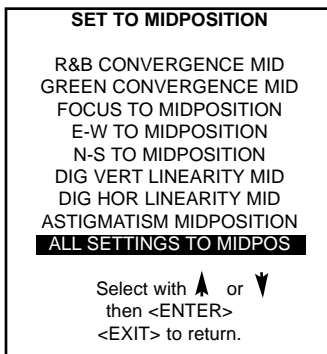
```
        ALL SETTINGS
        TO MIDPOSITION


            !


      Astigmatism settings
        in current block
      will be overwritten!

      <ENTER> to confirm
      <EXIT> to cancel
```
menu 2

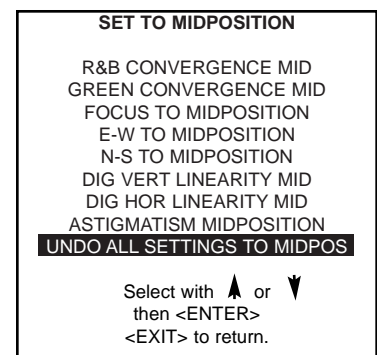## Undo All Settings to Midposition

What can be done?
'Undo all settings to Midposition' is displayed in the Memory management menu instead of 'All settings to midposition' when the latter is pressed.

An undo is possible as long as the projector is running on the same source (= same adjustment block) even when some adjustments as geometry or convergence are already readjusted. When undo is pressed all settings are reset to the previous settings.

How to cancel 'Set to midposition'?
When "All settings to midpos" is selected, all settings are set to their midposition. To cancel this action:
1. Push the cursor key ↑ or ↓ to highlight 'Undo All Settings to midpos' (menu 1).
2. Press **ENTER** to cancel the set to midposition action.
   Press **EXIT** to cancel the procedure 'undo set to midposition'.

```
     SET TO MIDPOSITION

   R&B CONVERGENCE MID
   GREEN CONVERGENCE MID
   FOCUS TO MIDPOSITION
   E-W TO MIDPOSITION
   N-S TO MIDPOSITION
   DIG VERT LINEARITY MID
   DIG HOR LINEARITY MID
   ASTIGMATISM MIDPOSITION
   UNDO ALL SETTINGS TO MIDPOS

   Select with ↑ or ↓
        then <ENTER>
      <EXIT> to return.
```
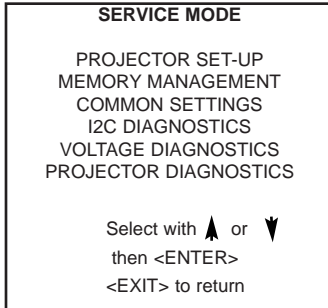menu 1

Common Settings

What can be done?
Within the common settings menu, the following items can be set up or executed:
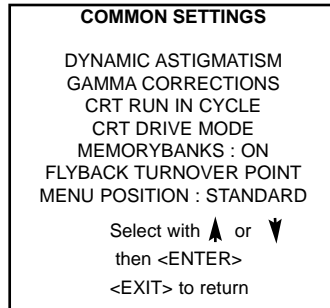- Dynamic Astigmatism
- Gamma Correction
- CRT run in cycle
- CRT Drive mode
- Memory banks : on/off
- Flyback turnover point
- Menu Position : standard/middle

How to select?
1. Push the cursor key ↑ or ↓ to highlight 'Common Settings' (menu 1).
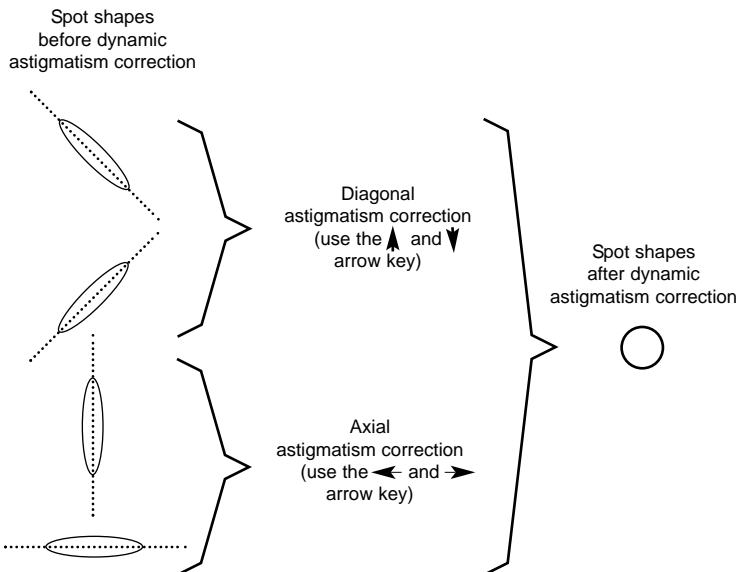2. Press ENTER to select. The common settings menu will be displayed (menu 2)

```
           SERVICE MODE

        PROJECTOR SET-UP
        MEMORY MANAGEMENT
        COMMON SETTINGS
        I2C DIAGNOSTICS
        VOLTAGE DIAGNOSTICS
        PROJECTOR DIAGNOSTICS


        Select with ↑ or ↓

          then <ENTER>
         <EXIT> to return
```
menu 1

```
          COMMON SETTINGS

        DYNAMIC ASTIGMATISM
        GAMMA CORRECTIONS
        CRT RUN IN CYCLE
        CRT DRIVE MODE
        MEMORYBANKS : ON
        FLYBACK TURNOVER POINT
        MENU POSITION : STANDARD

        Select with ↑ or ↓

          then <ENTER>
         <EXIT> to return
```
menu 2

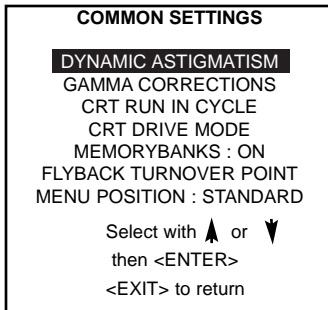# Dynamic Astigmatism

What can be done?
The spot shape adjustments correct the spot shape in 25 different areas on the screen for the three colors separately. The spot shape is adjusted according to the axial axises and the diagonal axises when using the cursor keys on the Remote. These adjustments have to be done on a dot pattern (external source or genlocked pattern).
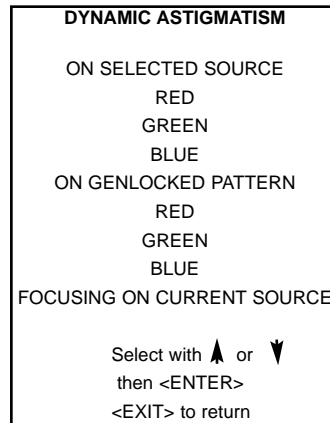

Spot shapes before dynamic astigmatism correction

Diagonal astigmatism correction (use the ↑ and ↓ arrow key)

Spot shapes after dynamic astigmatism correction

Axial astigmatism correction (use the ← and → arrow key)

Start Up

To start up the dynamic astigmatism:

1. Push the cursor key ↑ or ↓ to highlight 'Dynamic Astigmatism' (menu 1).
2. Press **ENTER** to display the dynamic astigmatism menu (menu 2). The dynamic astigmatism can be adjusted on the selected source or on pattern lock on the selected source (genlocked pattern). The way of adjusting is the same for both ways and for each color. The explanation will only be given for one color.
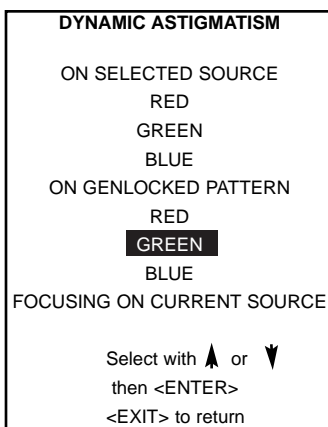
```
           COMMON SETTINGS

        DYNAMIC ASTIGMATISM
        GAMMA CORRECTIONS
        CRT RUN IN CYCLE
        CRT DRIVE MODE
        MEMORYBANKS : ON
       FLYBACK TURNOVER POINT
      MENU POSITION : STANDARD

          Select with ↑ or ↓
           then <ENTER>
        <EXIT> to return         menu 1
```

```
          DYNAMIC ASTIGMATISM

         ON SELECTED SOURCE
                 RED
                GREEN
                 BLUE
        ON GENLOCKED PATTERN
                 RED
                GREEN
                 BLUE
      FOCUSING ON CURRENT SOURCE


          Select with ↑ or ↓
            then <ENTER>
          <EXIT> to return        menu 1
```
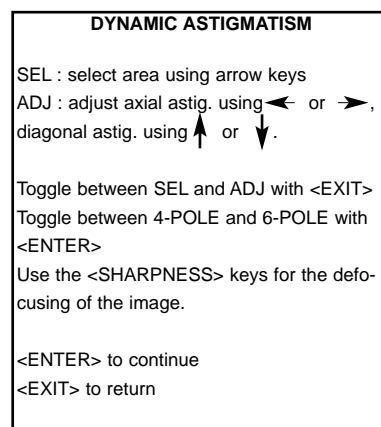
How to adjust?

The adjustment of the dynamic astigmatism is done on the selected source or genlocked pattern and for each color separately. The menu will be displayed hereafter for a genlocked pattern on the green image.

To adjust, follow the next procedure:

1. Push the cursor key ↑ or ↓ to highlight 'green' under Genlocked Pattern (menu 1).
2. Press **ENTER** to display the dynamic astigmatism adjustment menu (menu 2).
   The screen is divided into 25 areas (5 x 5) (menu 3). In each area, the spot shape can be adjusted.
3. Use the cursor keys to select the desired area.
4. Increase the contrast level using the Contrast Control to near maximum. Using the "+" Sharpness Key, defocus the image until the dots are large and easily visible.

```
          DYNAMIC ASTIGMATISM

         ON SELECTED SOURCE
                 RED
                GREEN
                 BLUE
        ON GENLOCKED PATTERN
                 RED
                GREEN
                 BLUE
      FOCUSING ON CURRENT SOURCE


          Select with ↑ or ↓
            then <ENTER>
          <EXIT> to return        menu 1
```

```
          DYNAMIC ASTIGMATISM

   SEL : select area using arrow keys
   ADJ : adjust axial astig. using ← or →,
   diagonal astig. using ↑ or ↓.

   Toggle between SEL and ADJ with <EXIT>
   Toggle between 4-POLE and 6-POLE with
   <ENTER>
   Use the <SHARPNESS> keys for the defo-
   cusing of the image.


   <ENTER> to continue
   <EXIT> to return              menu 2
```

5. Press EXIT to toggle the cursor keys from selection keys to adjustment keys.
6. Adjust first the 4 pole correction. Adjust the spot shape in the axial or diagonal direction, using the cursor keys. Adjust until the spot shape is circular. Use the cursor key ↑ or ↓ for the diagonal astigmatism adjustment and the cursor key ← or → for the axial astigmatism adjustment.
7. Press ENTER to toggle from the 4 pole correction to the 6 pole correction or vice versa.
8. Adjust the spot shape again using the cursor keys.
9. Press EXIT to return to the area selection screen.
10. Repeat from step 3 as may times as necessary.

Gamma Corrections

Start Up

To start up the gamma corrections :
1. Push the cursor key ↑ or ↓ to highlight 'Gamma Corrections' (menu 1).
2. Press ENTER to start up. A warning screen will be displayed (menu 2).

```
        COMMON SETTINGS

     DYNAMIC ASTIGMATISM
     GAMMA CORRECTIONS
     CRT RUN IN CYCLE
     CRT DRIVE MODE
     MEMORYBANKS : ON
     FLYBACK TURNOVER POINT
     MENU POSITION : STANDARD

       Select with ↑ or ↓

         then <ENTER>

         <EXIT> to return
```
menu 1

```
            WARNING
   RISK OF INCORRECT ADJUSTMENT
       OF THE PROJECTOR


   THE GAMMA CORRECTIONS ARE
   FACTORY ADJUSTED USING COLOUR
   ANALYSER! THEREFORE, ONLY
   QUALIFIED INSTALLATION OR SERVICE
   PERSONNEL SHOULD PERFORM
   THESE ADJUSTMENTS !

   <ENTER> TO CONTINUE
   <EXIT> TO RETURN
```
menu 2

CRT Run In Cycle

What can be done?

Only necessary when a new picture tube is installed or when CRT arcing continues. The CRT run in cycle option can only be activated when memory blocks on an internal # pattern are available. When one or more such blocks are available, a flashing white image (5 sec on, 5 sec off) is generated and then for 5 min on the first internal block. In the next 5 min, a second internal block will be used to generate the flashing white image. The image will also be shifted in a vertical way to prevent a CRT burn in. To quit the CRT run in cycle option, press EXIT.

How to select CRT run in cycle?

1. Push the cursor key ↑ or ↓ to highlight 'CRT run in Cycle' (menu 1).
2. Press **ENTER** to start up. If a memory block adjusted on an internal # pattern is available, the CRT run in cycle will start. If no such a block is available, the projector cannot run the CRT run in option and leaves the adjustment mode. If you still want to run CRT run in cycle, create first a memory block on an internal # pattern and restart the CRT run in option.

```
        COMMON SETTINGS

     DYNAMIC ASTIGMATISM
     GAMMA CORRECTIONS
     CRT RUN IN CYCLE
     CRT DRIVE MODE
     MEMORYBANKS : ON
     FLYBACK TURNOVER POINT
     MENU POSITION : STANDARD

       Select with ↑ or ↓
         then <ENTER>
         <EXIT> to return
```
menu 1

```
        CRT RUN IN CYCLE

     A flashing white pattern will be
   generated until <EXIT> is pressed.

      The projector only uses memory
       blocks adjusted on an internal
      # pattern; if no such block is
      available, the projector can't run
       the procedure and leaves the
            adjusment mode.

          <ENTER> to continue
           <EXIT> to cancel
```
menu 2

CRT Drive Mode

What can be done?
The projector CRT's can be driven with the normal current (normal mode), a lower current (economic mode) or with a higher current (boost mode). The higher the current, the higher the light output but the lifetime will shorten.
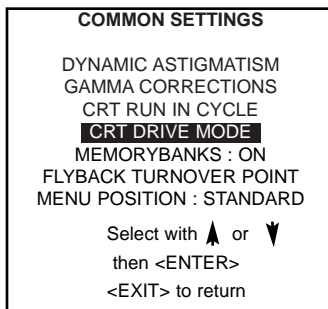
Available drive modes

- Normal
- Economic: Lower drive current to the CRT's, the lifetime of the CRT's will enlarge but the light output will reduce.
- Tempory boost: Higher drive current to the CRT's, the lifetime of the CRT's will shorten but the light output will be higher. This situation is temporary, when restarting the projector, the drive mode is automatically set to normal.
- Permanent boost: Higher drive current to the CRT's, the lifetime of the CRT's will shorten but the light output will be higher. This setting will be saved in the EEPROM. When restarting the projector, it will start up in boost mode.

How to change the drive mode?
To change the drive mode:
1. Push the cursor key ↑ or ↓ to highlight 'CRT Drive Mode' (menu 1).
2. Press **ENTER** to display the CRT Drive mode menu (menu 2).
3. Push the cursor key ↑ or ↓ to highlight the desired drive mode (menu 3).
2. Press **ENTER** to activate the selected drive mode.
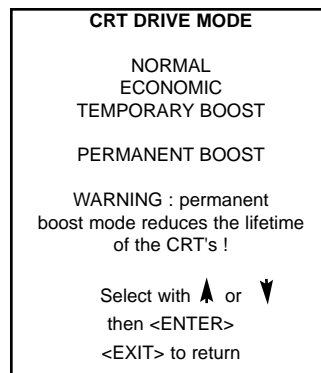
```
        COMMON SETTINGS                        CRT DRIVE MODE

     DYNAMIC ASTIGMATISM                            NORMAL
     GAMMA CORRECTIONS                             ECONOMIC
      CRT RUN IN CYCLE                          TEMPORARY BOOST
      CRT DRIVE MODE
     MEMORYBANKS : ON                           PERMANENT BOOST
   FLYBACK TURNOVER POINT
   MENU POSITION : STANDARD                   WARNING : permanent
                                          boost mode reduces the lifetime
     Select with ▲  or  ▼                         of the CRT's !

        then <ENTER>
       <EXIT> to return      menu 1           Select with ▲  or  ▼

                                                 then <ENTER>
                                                <EXIT> to return      menu 2
```
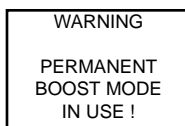
CRT Drive Mode Warning
A warning, permanent BOOST mode in use, will be displayed to inform the user.
When text is on, this warning will be repeated every time a new source is selected.

```
        WARNING

       PERMANENT
      BOOST MODE
        IN USE !
```

Memory Banks

What can be done?
The user has the possibility to create 8 different memory banks (formats) for each source. But, the maximum allowed quantity of memory banks for all sources together is 32.
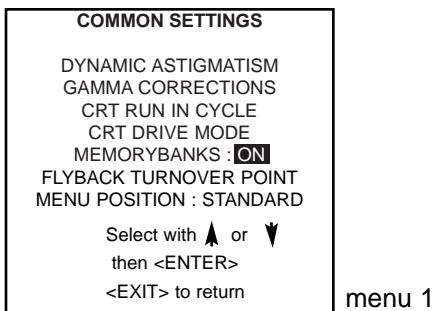The option to create different memory banks for the same source can be switched ON or OFF.

How to select Memory Banks?
1. Push the cursor key ↑ or ↓ to highlight 'Memory Banks' (menu 1).
2. Press **ENTER** to toggle between ON and OFF.
   ON : different memory banks available.
   OFF : only one memory bank available.
   If different memory banks are available for a source and the memory bank option is toggled to OFF, only the first memory bank will be used to display the source.

```
        COMMON SETTINGS

     DYNAMIC ASTIGMATISM
     GAMMA CORRECTIONS
      CRT RUN IN CYCLE
       CRT DRIVE MODE
     MEMORYBANKS : ON
   FLYBACK TURNOVER POINT
  MENU POSITION : STANDARD

      Select with ↑ or ↓
        then <ENTER>
       <EXIT> to return
```
menu 1

How to create a new memory bank?

1. Select your source. The projector selects the last used memory bank.
2. Press **ENTER**
3. Push the corresponding digit (between 1 and 8) of a non existing memory bank. (The memory banks can be created in random order, e.g. first creating bank 5 and later bank 2.)
4. Make the necessary adjustments. When leaving the source, the new created memory bank will be saved for later use.

Example: When source 1, video 15.6 kHz /60Hz is create on bank 4 and the vertical frequency changes to 50Hz, the projector will create a new block (due to the vertical frequency change) with the same bank number 4.

### How to recall a specific memorybank for the actual source?

When the memory bank option is ON and a source is selected, this source will be displayed with the last used memory bank settings.
An on-screen menu will give a indication of the memory bank nummer used (menu 1).
To switch to another memory bank :
1. Press ENTER to select the next memory bank in increasing order.
   or
2. Enter the number of the desired memory bank with the digit keys.

In both cases, the on-screen indication will be update.

```
   SOURCE XX
    MEMORY
     BANK
      4
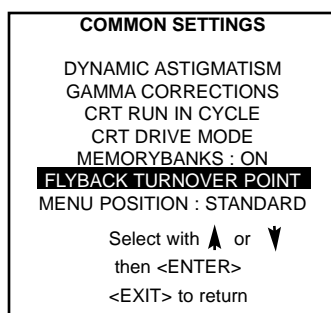```
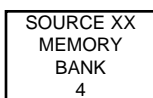
## Flyback Turnover Point

### What can be done?
The horizontal flyback time for horizontal frequencies can be long or short.  The turnover point from long to short can be installed by the user himself.
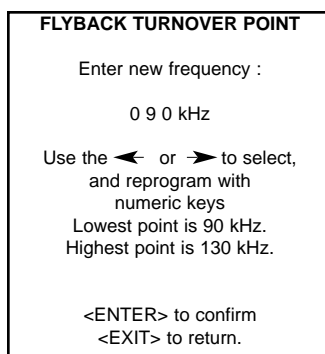
### Set Up of the Flyback Turnover Point
To set up the flyback turnover point:
1. Push the cursor key ↑ or ↓ to highlight 'Flyback turnover point' (menu 1).
2. Press **ENTER** to display the flyback turnover point (menu 2).
   The actual turnover point frequency will be filled in.
3. Select the digits with the left or right cursor keys and enter the new value with the digit keys on the Remote.
   The flyback turnover point frequency should be somewhere between 90 kHz and 130 kHz.
4. Press **ENTER** to select.

```
         COMMON SETTINGS

       DYNAMIC ASTIGMATISM
       GAMMA CORRECTIONS
        CRT RUN IN CYCLE
        CRT DRIVE MODE
       MEMORYBANKS : ON
     FLYBACK TURNOVER POINT
     MENU POSITION : STANDARD

       Select with ↑ or ↓
          then <ENTER>
        <EXIT> to return
```
menu 1

```
      FLYBACK TURNOVER POINT

       Enter new frequency :

            0 9 0 kHz

    Use the ◄ or ► to select,
        and reprogram with
           numeric keys
     Lowest point is 90 kHz.
     Highest point is 130 kHz.

       <ENTER> to confirm
        <EXIT> to return.
```
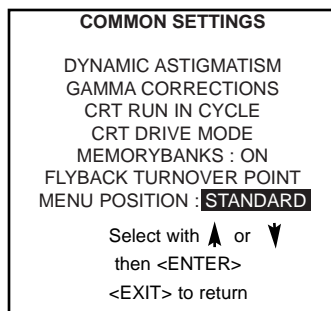menu 2

## Menu Position

### What can be done?
The bar scale menu, warning and message boxes can be displayed in the right lower corner or in the middle of the screen.

### How to change the position?
To change the position:
1. Push the cursor key ↑ or ↓ to highlight 'Menu position' (menu 1).
2. Press **ENTER** to toggle between STANDARD or MIDDLE.

```
         COMMON SETTINGS

       DYNAMIC ASTIGMATISM
       GAMMA CORRECTIONS
        CRT RUN IN CYCLE
        CRT DRIVE MODE
       MEMORYBANKS : ON
     FLYBACK TURNOVER POINT
     MENU POSITION : STANDARD

       Select with ↑ or ↓
          then <ENTER>
        <EXIT> to return
```
menu 1

## 12C Diagnostics

### What can be seen?
The I2C diagnostics menu gives an overview of the I2C failures inside the projector.
To scroll through the failure list, push the cursor key ↑ or ↓ .
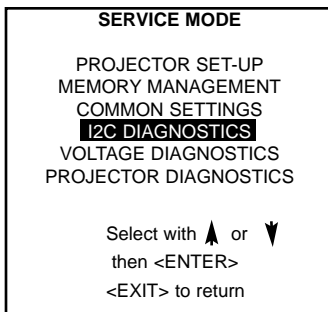The I2C address, IC number and module name will be given in I2C diagnostic menu.
When no errors are detected, the following message will appear on the screen:
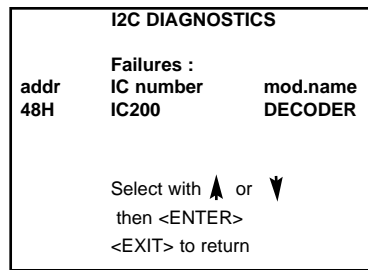"No errors on i2c-bus detected".

### How to select?
1. Push the cursor key ↑ or ↓ to highlight 'I²C Diagnostics' (menu 1).
2. Press **ENTER** to display the diagnostic menu (menu 2).

```
          SERVICE MODE

     PROJECTOR SET-UP
     MEMORY MANAGEMENT
      COMMON SETTINGS
      I2C DIAGNOSTICS
     VOLTAGE DIAGNOSTICS
    PROJECTOR DIAGNOSTICS

      Select with ↑ or ↓
        then <ENTER>
      <EXIT> to return
```
menu 1

```
          I2C DIAGNOSTICS

               Failures :
   addr   IC number   mod.name
   48H   IC200   DECODER

          Select with ↑ or ↓
            then <ENTER>
          <EXIT> to return
```
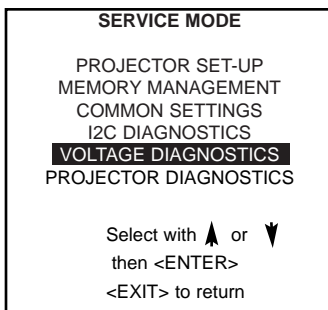menu 2

## Voltage Diagnostics

### What can be seen?

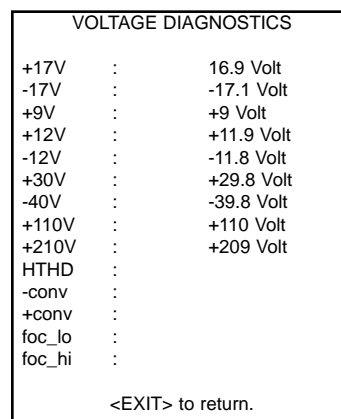The real value of the different voltages will be displayed on the voltage diagnostics menu.

### How to start up?

1. Push the cursor key ↑ or ↓ to highlight 'Voltage diagnostics' (menu 1).
2. Press **ENTER** to display the voltage diagnostic menu (menu 2).

```
          SERVICE MODE

     PROJECTOR SET-UP
     MEMORY MANAGEMENT
      COMMON SETTINGS
      I2C DIAGNOSTICS
     VOLTAGE DIAGNOSTICS
    PROJECTOR DIAGNOSTICS

      Select with ↑ or ↓
        then <ENTER>
      <EXIT> to return
```
menu 1

```
        VOLTAGE DIAGNOSTICS

   +17V   :   16.9 Volt
   -17V   :   -17.1 Volt
   +9V   :   +9 Volt
   +12V   :   +11.9 Volt
   -12V   :   -11.8 Volt
   +30V   :   +29.8 Volt
   -40V   :   -39.8 Volt
   +110V   :   +110 Volt
   +210V   :   +209 Volt
   HTHD   :
   -conv   :
   +conv   :
   foc_lo :
   foc_hi :

          <EXIT> to return.
```
menu 2

## Projector Diagnostics

### What can be seen?

A log of the last 5 failures with the run time when the failure happened is documented in the Projector Diagnostics.

### How to display the Projector Diagnostics?

1. Push the cursor key ↑ or ↓ to highlight 'Projector diagnostics' (menu 1).
2. Press **ENTER** to display the projector diagnostic menu (menu 2). The last failure will be displayed.
3. Use the cursor keys to scroll through the failure log.
4. Press **ENTER** to switch to the voltage diagnostics (menu 3).
5. Press **EXIT** to return to the projector diagnostics menu.

```
        SERVICE MODE

     PROJECTOR SET-UP
     MEMORY MANAGEMENT
     COMMON SETTINGS
     I2C DIAGNOSTICS
     VOLTAGE DIAGNOSTICS
   PROJECTOR DIAGNOSTICS

     Select with ▲ or ▼
       then <ENTER>
       <EXIT> to return
```
menu 1

```
    PROJECTOR DIAGNOSTICS

Failure nr : 2
Runtime : 180h 30 min
Projector block nr : 4

Coincidence : ON
Deflection : OFF

SF   : yes   EHT fail : no
SF vert   : no   HD EHT : no
SF hor   : no   Fan Fail : yes
IBCL fail : no

Arrow keys to scroll,
<ENTER> to see the voltages,
<EXIT> to return.
```
menu 2

```
     VOLTAGE DIAGNOSTICS

+17V   :   16.9 Volt
-17V   :   -17.1 Volt
+9V   :   +9 Volt
+12V   :   +11.9 Volt
-12V   :   -11.8 Volt
+30V   :   +29.8 Volt
-40V   :   -39.8 Volt
+110V   :   +110 Volt
+210V   :   +209 Volt
HTHD   :
-conv   :
+conv   :
foc_lo :
foc_hi :

        <EXIT> to return.
```
menu 3

# PROGRAMMABLE FUNCTION KEYS _____

## Programmable Function Keys

### What can be done with these keys?

The five function keys on top of the remote control can be programmed
as short cut keys (quick access) to almost any adjustment function.
See list futher in this chapter.
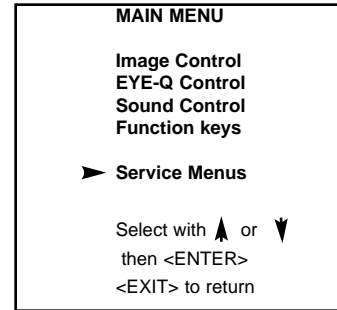
### How can a Function Key be programmed?

A function key can only be programmed when in the service menus.
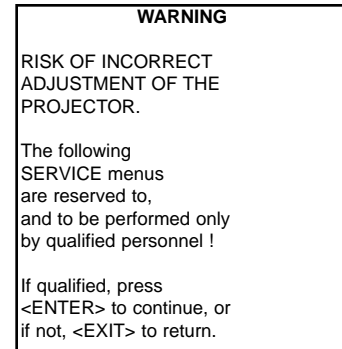
Perform the following:

1. Scroll through the menus until the desired function is on the menu.
2. Select this function by pushing the cursor keys up or down.
3. Press the desired function key for this function.
   The following message: "Programming Function Key Fx"
   will be displayed.
   The message will disappear automatically and the function
   key is programmed.
4. Leave the adjustment mode by pressing ADJUST.
5. The function key is available in the operational mode.
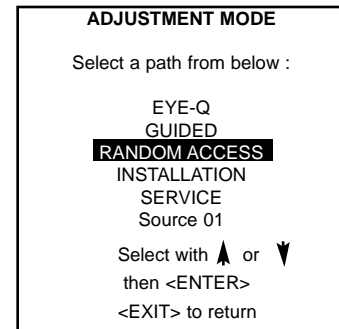
e.g. programming horizontal phase on key F4.

1. Press **ADJUST** to enter the main menu (menu 1).
2. Push the cursor keys ↑ or ↓ to select 'Service menu'.
3. Press **ENTER** to go into the adjustment menus.
   A warning will be displayed (menu 2).
4. If qualified, press **ENTER** otherwise press **EXIT** and call for
   technical assistance.
5. Select Randon by pushing the cursor keys ↑ or ↓ .
6. Press **ENTER** to display the Random Access mode menu (menu 3).
7. Push the cursor keys ↑ or ↓ to select 'Geometry'.
8. Press **ENTER** to display the Geometry menu (menu 4).
9. Push the cursor keys ↑ or ↓ to select H PHASE (menu 4).
10. Press 'F4' to program this key.
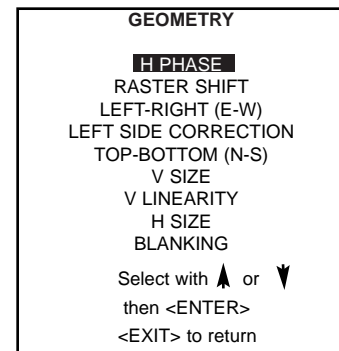11. Press **ADJUST** to return to operational mode.

```
         MAIN MENU

       Image Control
       EYE-Q Control
       Sound Control
       Function keys

  ➤   Service Menus

     Select with ↑ or ↓
       then <ENTER>
      <EXIT> to return
```
menu 1

```
          WARNING

  RISK OF INCORRECT
  ADJUSTMENT OF THE
  PROJECTOR.

  The following
  SERVICE menus
  are reserved to,
  and to be performed only
  by qualified personnel !

  If qualified, press
  <ENTER> to continue, or
  if not, <EXIT> to return.
```
menu 2

```
      ADJUSTMENT MODE

   Select a path from below :

          EYE-Q
          GUIDED
      RANDOM ACCESS
        INSTALLATION
          SERVICE
         Source 01

     Select with ↑ or ↓
       then <ENTER>
      <EXIT> to return
```
menu 3

```
         GEOMETRY

         H PHASE
        RASTER SHIFT
      LEFT-RIGHT (E-W)
    LEFT SIDE CORRECTION
      TOP-BOTTOM (N-S)
          V SIZE
        V LINEARITY
          H SIZE
         BLANKING

     Select with ↑ or ↓
       then <ENTER>
      <EXIT> to return
```
menu 4

# MESSAGES, WARNINGS AND FAILURES

```
INPUT 01
RGB2
Fh= 15.6 kHz
Fv= 050 Hz
```

When selecting a new source, information about this source will be displayed on the screen. Source number, horizontal and vertical frequencies of the displayed source.

```
WARNING :

source not
available
```

The input is a valid input but the source is not connected to the input terminals or the input source is switched off.

```
SOURCE 01
RGB2
```

Announcement of the selected source.

```
WARNING :

invalid
key entry
```

When a wrong key is pressed on the Remote.

```
enter
password
x x x x
```

Message to enter your password. Password contains 4 digits.

```
WARNING :

end of ad-
just range
```

End of adjustment range.

```
TEXT on
SOURCE 01
RGB2
xxxkHz
xxHz
```

These messages will be displayed on the screen when pushing the TEXT key.

Text ON : the 'bar scale indication' will be enabled during the change of an analog control in the 'operational mode' + all warnings and failures will be displayed.

```
TEXT off
```

Text OFF : the 'bar scale indication' will be disabled during the change of an analog control in the 'operational mode' + all warnings and failures will not be displayed.

```
WARNING :
input
no longer
available
```

The input source is no longer available.

```
WARNING :
invalid
frequency
input
```

The entered frequency or applied frequency of the source is out of the projector's range.

```
PROJECTOR
ADDRESS :
003
```

Indication of the projector address when activating the 'ADDRESS' button on the Remote with a pencil or other small object.

```
WARNING :
permanent
BOOST mode
in use !!!
```

The CRT drive mode is switched to permanent boost.

```
WRONG
PASSWORD
!!!
```

Message when the entered password is wrong.

```
WARNING :
Option not
installed !
```

Option not installed. e.g. Video selected but no decoder installed.

```
WARNING :

Invalid Code Entry
```

The entered password is incorrect

FAILURE **I2C error** **addr. : 7FH3**	Hardware failure. Call a qualified service technician for repair.

FAILURE **short** **circuit on** **I2C bus**	Hardware failure. Call a qualified service technician for repair.

FAILURE **invalid input**	Input not valid

FAN FAILED **Projector will** **switch off**	Projector switched off due to a fan fail.

FAILURE **EYE-Q** **configuration failed**	Error occured while configuring the EYE-Q module.

ADJUSTMENT BLOCKS AND SOURCE NUMBERS 90-99 _____

Adjustment Blocks (Memory Blocks)

What are adjustment block?

As the projector is digitally controlled, all geometry and convergence adjustments are stored in the projector's memory as numeric values. These numeric values are used to control digital potentiometers which in turn, control the projector. Each source connected to the projector has a unique set of adjustment data which is automatically downloaded into the projector's digital potentiometers once the source has been selected. This set of adjustment data is referred to as an "adjustment block".

An adjustment table is automatically created for a source when the source is first connected to the projector and the Adjustment mode is entered. If other sources have already been connected to the projector and geometry and convergence adjustments have been performed on these sources, the projector will use Linear Digital Interpolation to create a new block for the new source. This block will provide an initial set of adjustments for the new source that have been calculated by the projector from "previous experience".

The projector's memory has the capacity to store 32 adjustment blocks. The adjustment block consists of two parts, the block header and the data representing the values for all adjustments (eg. Convergence and Geometry) in the projector for the source the block corresponds to. The block header contains the basic characteristics of the source and the projector configuration used to display the source.

Built up of block

Block Header	Example of Block Header
Block Number	01
Source Number	01
Horizontal Frequency	15.6 kHz
Vertical Frequency	50 Hz
Input Type	Video
Scan Switch Configuration	Front/Ceiling

The data representing the various adjustments for the source follows the block header.
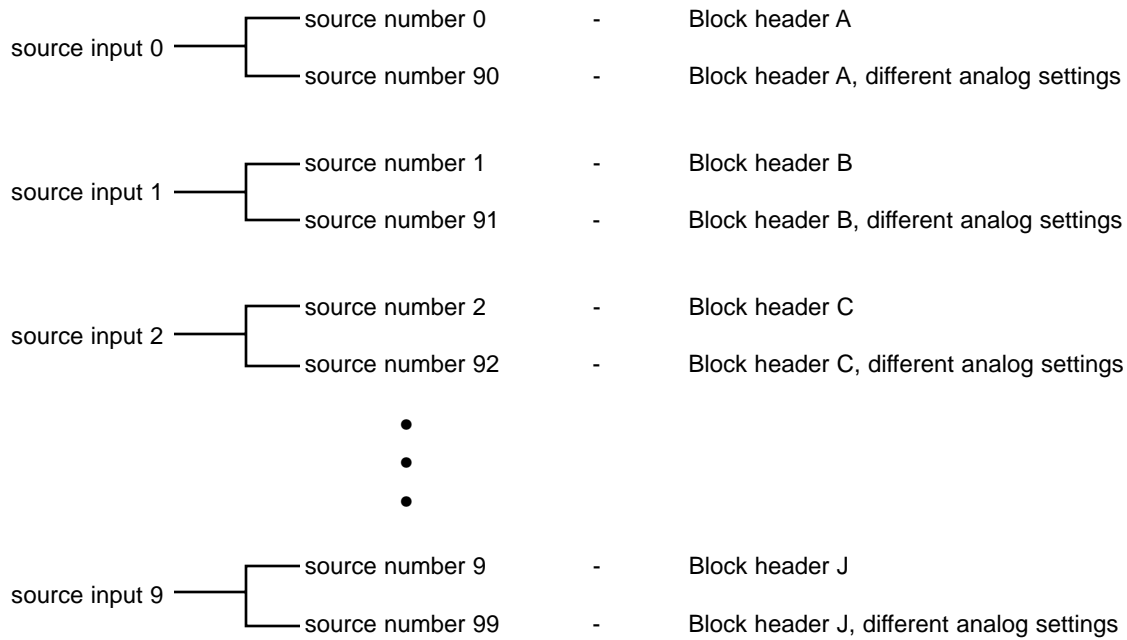
Source Numbers 90-99

Why used?

Source numbers 90 - 99 are used to assign an additional adjustment block to a source. This additional adjustment block may contain different geometry and convergence settings, sync fast/slow positions and enhanced blue on/off settings. The relationship between source numbers 1 - 5 and 91 - 95 is shown in the diagram on the next page. The alternate adjustment block for sources 1 - 5 is activated by selecting the corresponding source number 1 - 5. Once this source number is selected, the alternate block of adjustment data is in use and may be modified via the adjust mode of the projector. The alternate adjustment block is automatically stored.

How to create a second block?

Follow the steps below to create a second adjustment block for a source between 0 and 9.

1. Select the source between 0 and 9 that the second adjustment block is to be created for.
2. Select the corresponding source number between 90 and 99. The adjustment block for the source number between 0 and 9 is copied to the corresponding source number between 90 and 99.
3. Enter the adjust mode and make any desired changes (geometry, convergence, sync fast/slow, enhanced blue on/off) to the second adjustment block.
4. Exit the adjust mode.

```
source input 0 ──┬── source number 0        -        Block header A
                 └── source number 90       -        Block header A, different analog settings


source input 1 ──┬── source number 1        -        Block header B
                 └── source number 91       -        Block header B, different analog settings


source input 2 ──┬── source number 2        -        Block header C
                 └── source number 92       -        Block header C, different analog settings

                              ●
                              ●
                              ●

source input 9 ──┬── source number 9        -        Block header J
                 └── source number 99       -        Block header J, different analog settings
```

RS-232 CODES

Baud Rate: 9600
Data Length: 8 Bits
Parity: None
Stop Bit: 1

Structure: Hex (nine bytes)
Byte 1 - wake-up command. Always "02"
Byte 2 - command offset. Normally "00", changed if there is another "02"in the command.
Byte 3 - Projector address. Normally "00" will address all projectors.
Byte 4 - Main Command
Byte 5 - additional data
Byte 6 - additional data
Byte 7 - additional data
Byte 8 - additional data
Byte 9 - checksum. Add byte 3 - 8 without offset, then add offset and take last two Bytes.

Power Toggle: 02.00.00.0E.00.00.00.00.0E
Power On: 02.00.00.51.0A.00.00.01.5C
Power Off: 02.00.00.51.0A.00.00.00.5B

Enter: 02.00.00.07.00.00.00.00.07
Exit: 02.00.00.08.00.00.00.00.08
Adjust: 02.00.00.09.00.00.00.00.09
Text Toggle: 02.00.00.0D.00.00.00.00.0D

Cursor Up: 02.00.00.21.00.00.00.00.21
Cursor Down: 02.00.00.22.00.00.00.00.22
Cursor Right: 02.00.00.23.00.00.00.00.23
Cursor left: 02.00.00.24.00.00.00.00.24

Button 0:   02.00.00.10.00.00.00.00.10
Button 1:   02.00.00.11.00.00.00.00.11
Button 2:   02.00.00.12.00.00.00.00.12
Button 3:   02.00.00.13.00.00.00.00.13
Button 4:   02.00.00.14.00.00.00.00.14
Button 5:   02.00.00.15.00.00.00.00.15
Button 6:   02.00.00.16.00.00.00.00.16
Button 7:   02.00.00.17.00.00.00.00.17
Button 8:   02.00.00.18.00.00.00.00.18
Button 9:   02.00.00.19.00.00.00.00.19

Contrast +:   02.00.00.28.00.00.00.00.28
Contrast -:   02.00.00.29.00.00.00.00.29
Brightness +:   02.00.00.2A.00.00.00.00.2A
Brightness -:   02.00.00.2B.00.00.00.00.2B
Color +:   02.00.00.2C.00.00.00.00.2C
Color -:   02.00.00.2D.00.00.00.00.2D
Tint +:   02.00.00.2E.00.00.00.00.2E
Tint -:   02.00.00.2F.00.00.00.00.2F
Sharpness +:   02.00.00.36.00.00.00.00.36
Sharpness -:   02.00.00.37.00.00.00.00.37

All commands are in hex and will be entered differently with each control system.
For example:
Phast = Power On: $02,$00,$00,$51,$00,$00,$00,$01,$5C
AMX= Power On: h02,h00,h00,h51,h00,h00,h00,h01,h5C
Crestron = Power On: \x02\x00\x00\x51\x00\x00\x00\x01\x5C

Pin Configuration: 9-pin din female.
Pin 2 - RXD
Pin 3 - TXD
Pin 5 - Ground
Straight thru wire configuration

CEILING/FLOOR CONFIGURATION

Ceiling Mount
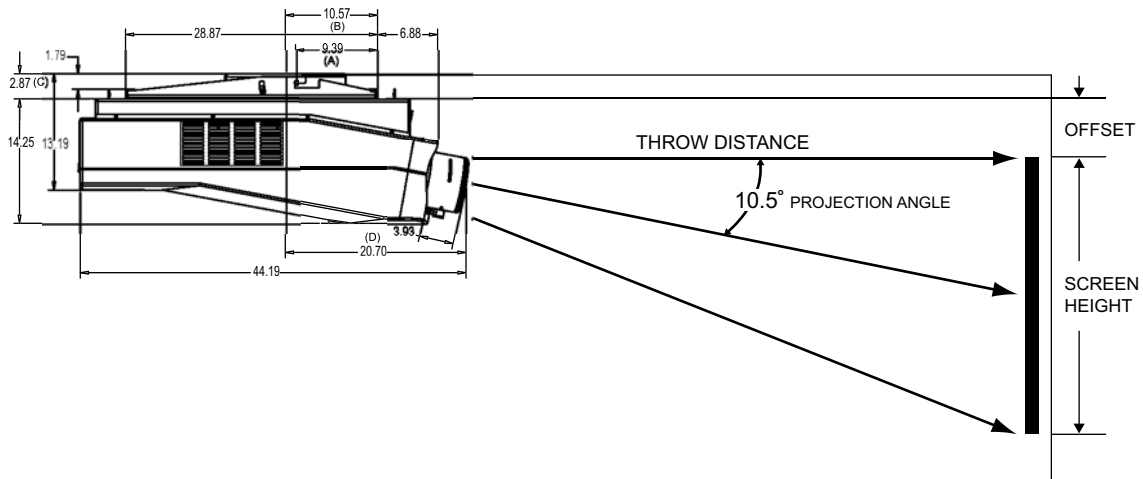
Overall Dimensions: Length: 44.20 in x Width: 26.77 x Height: 14.25 in.

A = Center of Gravity = 9.39 in.

B = Center = 10.57 in.

C = Bracket Height = 2.87 in.
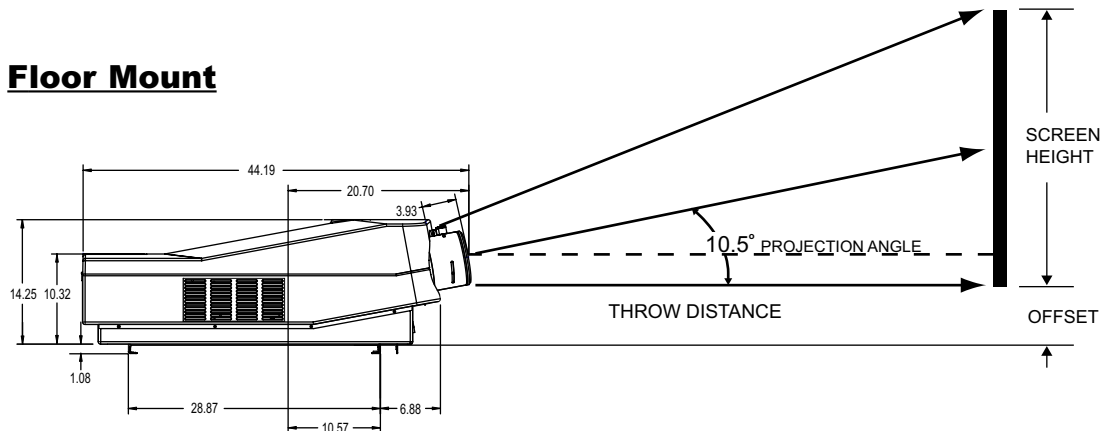
D = Lens to Center of Bracket = 20.70 in.

Screen Dimensions _____H x _____W

TD = Throw Distance Factors

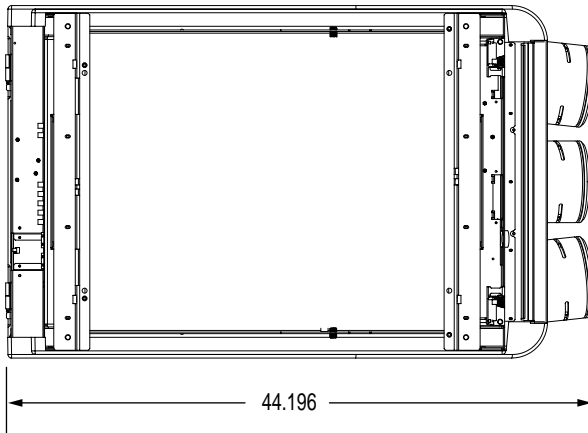TD for **16 x 9 screens:** (screen width x 1.43) = _____ inches

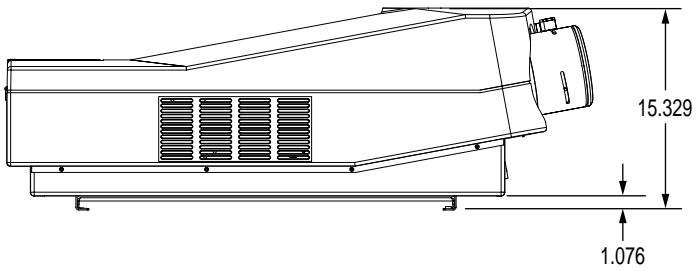TD for **4 x 3 screens**: (screen width x 1.48) = _____ inches
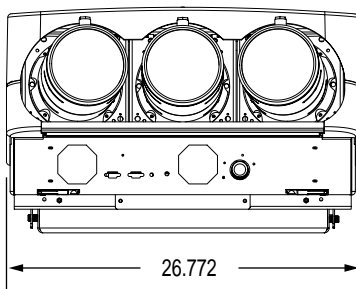
Floor Mount

DIMENSIONS

Bottom View

44.196

Side View

15.329

1.076

Front View

26.772

SPECIFICATIONS _____

Scan Frequency:	Horizontal: 32-132 kHz, Vertical: 37-210 Hz
Optical Resolution:	HD-120 lenses, 12 line pairs per, mm, 1250 TV lines
Video Standards:	NTSC/PAL/SECAM
Video Resolution:	1250 TV lines
Retrace Time:	Horizontal: 1.8 uS, Vertical: 300 uS
Bandwidth:	180 MHz
CRTs:	9-inch, high definition, liquid coupled tubes with electromagnetic focus and color filters
Lenses:	Super high definition, fully color corrected F1.15 lenses
Inputs:	RGB/Component
Color Balance:	Four user selectable settings: 3200K, 5400K, 6500K, 9300K, and Custom
Input Memories:	32 separate memories with 8 memories per scan frequency
Internal Setup Pattern:	Crosshatch, Focus
Light Output:	1300 lumens/250 ANSI lumens
Picture Size:	90-300 in. (4:3) diagonal
Throw Distance:	1.43 x width (widescreen), 1.48 x width (standard 4:3)
Vertical Offset:	Maximum vertical offset = 5°
Configurations:	Front or rear, floor or ceiling mount
Aspect Ratios:	Anamorphic, widescreen, 4:3
Contrast Ratios:	100:1 (JIS Method). 20:1 (HDTV Method)
Convergence:	Digital zone convergence with 81 individual zones
Focus:	Digital focus with multiple zones
Power Requirements:	110 VAC, 50/60 Hz (220V International version)
Power Consumption:	800 W
Cabinet Dimensions:	Width: 26.77 in./680 mm
	Depth: 44.20 in./1123 mm
	Height: 14.25 in./362 mm (without feet), 15.33 in./389 mm (with feet)
Weight:	187 lbs./85 Kg.
Regulatory Approvals:	Complies with FCC Class "B", CE, C-Tick
Storage:	10-122° F (-12-50° C)
Operating Environment:	32-104° F (0-40° C)
Humidity:	0-90% non-condensing
Included Accessories:	Remote control, AC power cord and Owner's Operating Manual
Warranty:	**Service Labor and Parts (except lamp):** Runco warrants the product for one (1) year from the date of delivery to the end user.
	Lamp: 6 months or 1000 hours (which ever comes first).

RUMA-009450 rev 1-02

RUNCO